

List of contents

Chapter number	Title
1	Introduction
2	Environmental legislation
3	Project description
4	Existing environment
5	alternatives
6	Environmental impact
7	Environmental monitoring plan
8	Attachments

List of tables

Table No.	Title	Page No.
1	gas consumption by sector	2
2	represents governorates, ministries and their responsibilities	8
3	The Maximum Limits Of Emission From Fuel Burning Sources	16
4	Maximum Limits Of outside Air Pollutants (micrograms/m ³)	16
5	Maximum Limits Of Emitted Total Solid Particles	16
6	Maximum Limits of emissions (exhaust) from vehicle engines Gasoline and diesel vehicles:	17
7	Maximum limits for permissible Pollution inside work places and closed locations due to the type of each industry	18
8	Maximum Permissible Limits Of Sound Intensity Inside Places Of Productive Activities	19
9	The Maximum Permissible Periods For Exposure To Noise At Work Premises	19
10	Maximum Permissible Exposure Periods (Number Of Knocks During The Daily Shift) Depending On The Noise Intensity	20
11	Maximum Permissible Limits For Noise Intensity In Different Zones	20
12	Maximum Permissible Limits and Specifications of water quality	21
13	authority /governorate.	23
14	DESIGN GAS COMPOSITION AND FLOW RATE	26
15	Types & number of equipments used during the construction phase	29
16	Frequency of Patrol	31

17	Specifications of Valve Rooms	32
18	Maximum, Minimum and Average Air temperature	52
19	rain and relative humidity	53
20	WIND	54
21	Alternatives analysis	60
22	Comparison of the three considered alternatives	61
23	Environmental Impact of the proposed air emissions	67
24	Sound Pressure Levels of Construction Machinery	73
25	heat stress	79
26	The environmental control plan during the construction phase	128
27	the environmental control plan during the operation phase	129

List of figures

Figure No.	Title	Page No.
1	gas consumption	3
2	TIME SCHEDULE	28
3	Stages of the Horizontal Directional Drilling Technique (HDD)	40
4	intensity distribution of earthquakes	46
5	location of permanent seismic stations and epicenters	47
6	Epicentral distribution of all earthquakes, focal mechanisms of principal earthquakes and active seismic trends.	48
7	Maximum, Minimum and Average Air temperature	53
8	amount of rain fall in the study area	53
9	amount of humidity in the study area	54
10	WIND at study area	55
11	WIND at study area	56

El nubaria – el sadat Gas Pipeline

Environmental Impact Assessment



0.0- Executive & Non Technical Summary

-This Environmental Impact Assessment (EIA) has been prepared to comply with the Egyptian Environmental Regulations (Law No. 4, 1994 and its Executive Regulations), in comparable with the Casco's Health, Safety and Environment Policy (Appendix (1)).

The scope of work includes construction of el nubaria – el sadat gas pipeline with 69 Km length and 36" diameter.

This pipeline will be constructed for purpose of:

- increase the amount of natural gas delivered to Upper Egypt and to increase the gas amount supported to Cairo..

The pipeline starts from the valve room in front of EL NOUBARIA power station (this room is the end of ABO HOMOS EL NOUBARIA pipeline) with 69 Km length and 36" diameter, then it extends to the east parallel to the north wall of EL NOUBARIA power station, then it turns to the west parallel to asphaltic road in front of Othman Ibn Afan village, El Fattah village and Abu Baker El Sadiak village until it reaches El Maged village, then turns west in front of the power station and extends about 7 Km parallel to the asphalted road, then turns south parallel to Wadi El Natroun road until crossing with Cairo-Alex desert road and extends parallel to SUMID pipelines in the eastern south direction this area was prepared before for oil and gas pipelines so there are no natural protectorates nor obstructions only some private farms of low population are found , the pipeline will cross some subsidiary roads of low traffic density one of them leads to EL Anba Makkar monastery, after that the pipeline extends until it reaches the off take of El Sadat city on Dahshour El Ameria pipeline .

A several survey were needed to locate the appropriate pipeline rout to avoid the urban areas along its path

All positive and negative impacts were analyzed, and suitable mitigation measures were designed for the negative impacts.

The undertaken project has major environmental and socio-economic positive impacts. From the environmental point of view, the use of natural gas (green fuel) will help in conserving the surrounding air quality due to the following reasons:

- Natural gas produces neither particulates nor significant quantities of sulphur dioxide (SO₂) and/or nitrogen oxides.
- Only minute quantities of unburned residues of combustion, carbon monoxide (CO) or hydrocarbons remain after burning of the natural gas.

El nubaria – el sadat Gas Pipeline

Environmental Impact Assessment



0.0- Executive & Non Technical Summary

- Natural gas is clear of trace elements as it does not contain more than minute quantities of the heavy metals encountered in other fuels so it is considered as clean fuel.
- The properties of natural gas have many advantages with regard to the prevention of acid rain and ozone depletion.

From the socio-economic point of view, the proposed project represents an economic attractive option because of the following reasons:

- This project will effectively improve the Egyptian natural gas transmission infrastructure.
- It represents the basic project for Transport the gas from rich natural gas wells in delta to the south part of Egypt

Moreover, pipelines are a safe and reliable method of transportation of natural gas. Also they have a very low accident rate compared with other transportation methods (e.g. manual handling for compressed gas cylinders).

In addition, the construction phase of the proposed project will improve the economic profile of the inhabitants of neighboring areas.

I. ABOUT THE EIA

This Environmental Impact Assessment (EIA) has been presented in compliance with the Egyptian Environmental Regulations and *GASCO's* HSE policy. It has been designed specifically to support the future environmental management of the area and to be a reference document for the life of the project. This assessment describes the project activities, the current and proposed Egyptian environmental legislation, and the existing environmental features around the study area. It evaluates the potential impact of the operations and identifies the mitigation procedures to be followed in order to eliminate any risk of contamination. It provides the framework for the future environmental management of the area in order to minimize the negative impacts of operations.

El nubaria – el sadat Gas Pipeline

Environmental Impact Assessment



0.0- Executive & Non Technical Summary

A description of the existing environment in the study area provides details on physical, chemical and biological features.

The contents of this report cover the findings of the environmental impact assessment of the proposed project. It deals with several stages of the project as outlined in the sections through this report:

Section 1: Introduction

It gives description of the aim of the EIA, the system of the review and the history of EIA. It also set out the objectives of establishing EIA for the project.

Section 2: Environmental Legislation and Regulations

This section discusses the policy, legal, and administrative framework within which the EIA is carried out. Also, it gives a brief for the main elements and requirements of GASCO's Health, Safety and Environment Management System

Section 3: Project Description

This section gives a detailed description of the project location and existing environment. It also includes an assessment of activities of the proposed project facilities.

Section 4: existing environment

This section gives detailed information about the basic items of EIA Study including: Environmental profile of the surrounding environment to identify any particular areas of significant environmental sensitivity. Climate data.

Section 5: Analysis of Alternatives

Systematically compares feasible alternatives to the proposed project site, technology, design and operation including the “no action” situation.

El nubaria – el sadat Gas Pipeline

Environmental Impact Assessment



0.0- Executive & Non Technical Summary

Section 6: Environmental Impacts

This section gives prediction of the likely effective potential environmental impacts and assessment of their significance.

Section 7: Environmental Mitigation & Management

This section describes the mitigation measures during construction and operation to minimize potential environmental negative impacts from the different project stages and the environmental management that assure controlling of the impacts developed by the project.

Section 8: Conclusions

This section segregate the conclusions derived through the EIA process.

Section 9: Public Consultation

This section discusses the public consultation process that was held. It details the response of public and landowners towards the project, supported with photos.

II. Fundamentals

THE SITE VISIT

A site visit was held for the route of the pipeline on 11/09/2009. The need of the site visit is to examine the route to record the surrounding environments along the line and to specify the environmental aspects which must be considered.

The methodology adopted for the site visit is as following:

- Review of all the technical data and maps.
- Determination of the environmental aspects that shall be considered during the site visit. It was found that the following eight environmental aspects must be examined along the pipeline route:
 1. Environmental protected area.
 2. Water bodies.



0.0- Executive & Non Technical Summary

3. Agriculture / Land use
4. Existing corridor.
5. Topography / Seismic.
6. Social sensitivities.
7. Archaeological / Historical sites.
8. Third party interference.
 - Dividing the route into sections for the ease of the examining the whole route. In the proposed pipeline, valve rooms locations were considered for the sectioning the route.
 - Preparing a checklist for the sections to record the site visit notes versus the chosen environmental aspects.
 - Taking photographs as pictorial records.

MAJOR ENVIRONMENTAL IMPACTS

The assessment of the potential environmental impacts of the proposed pipeline project revealed that the main potential sources of impact are almost exclusively associated with the construction phase which is temporary. Operational impacts could only arise through unforeseen accidents since (GASCO) will take all necessary precautions against such incidents to protect pipeline from damage and maintain its integrity.

In general, the basic environmental impacts associated with the construction and operation phase of the proposed pipeline could be summarized as following:

- Temporary disturbance to the surrounding nature (desert, canals, roads, agricultural and urban areas, etc.) from the pipeline crossings.
- Temporary disturbance to local community.
- Discharge of air pollutants due to the following:
 - Potential pipeline rupture or leak.
 - Small controlled amount of natural gas which commonly releases during operating safety devices and maintenance procedures.

El nubaria – el sadat Gas Pipeline

Environmental Impact Assessment



0.0- Executive & Non Technical Summary

The potential environmental impacts from the construction phase will be temporary and limited to the construction sites, but even these areas will be rapidly rehabilitated.

There is a low risk of major accidental gas release. However, **GASCO** will take all necessary precautions against such incidents and a contingency plan will be in place.

The mitigation measures cover the whole life cycle of the proposed project in order to minimize the expected environmental consequences as far as possible. These mitigation measures are covered in details in the report.

A briefing of the most significant impacts is listed below.

- **HYDROSTATIC TEST WATER**

The hydrostatic test is a test that being done for the pipeline to examine its quality and its emptiness from any leak or defects. It is done by filling the pipeline with water which is subject to high pressure equivalent to the pressure of the gas that will pass in the pipe during operation. The pressure is left for 24 hours, meanwhile patrolling along the pipe is done to check any leakage in pressure along the pipeline.

In general, the impact arising from test is resembled in the water used in the test on three axes: (a) source of water; (b) the place of disposal of the water after test, and; (c) the additive to water like the corrosion inhibitor. The receptors of the hydrostatic water are the soil, the surface water or the groundwater or all of them; this is in case that the water was discharged to them.

As for our project, • the source of hydrostatic test water will be from the Nubaria power station where the main source of water to Nubaria power station is from Nubaria conduit which is about 500 meter from the power station, the amount of water needed is about

El nubaria – el sadat Gas Pipeline

Environmental Impact Assessment



0.0- Executive & Non Technical Summary

11.000 meter cube and the discharge of this water after finish the test will be again into the nubaria conduit but not before tested for any harmful or dangerous chemicals and the discharge of the water will be in form of dosage in order not to make any effect on the marine life.

So, the impact of this test is low in magnitude and short duration; since the test last only for 24 hours. Also, sampling and analysis for the water after test, as well as the water of the canal, shall be done to assure that no change in the water quality has occurred. The analysis shall be done against Law 48/82.

Incase that the water analysis is not comply with the specification of Law 48/82, GASCO committed for water treatment according to specifications of the Law

- **SOLID WASTE**

Solid waste in this project arises only from the construction phase. The solid waste resembled in the sands, stones and rubbles resulting from the trenching. The tunnels of the pipeline and flattening the route, empty containers, scraps, garbage, wood and waste from the welding works. The receptors in this case are the soil and/or the surface water if this waste being thrown on them. The impact resembled in affecting badly the quality of the water bodies besides its aesthetic value if these waste were thrown on the ground or into the surface water.

As for our project, the soil, sands and rubbles that shall arise will be reused in backfilling of the pipeline after laying in the trench. The areas along the pipeline shall be restored as before. Regarding the garbage and other types of solid waste, **GASCO** shall use an authorized contractor for collecting and disposal of this waste in coordination with the local authorities. Therefore, the project will have a short-term and low magnitude impact on aesthetics.

El nubaria – el sadat Gas Pipeline

Environmental Impact Assessment



0.0- Executive & Non Technical Summary

- ***THE PIPELINE THROUGH THE AGRICULTURAL LANDS***

When The pipeline extends through the agricultural lands the receptors are the farms and cultivated areas. The impact resembled in removing of the fertile soil in these areas.

The project has a short-term, localized and moderate magnitude on the agricultural lands. The impact is restricted on the construction phase, so it is a short term impact. Removal of the soil shall not be done in an aggressor manner; it shall be localized limited to the pathway of the pipeline. Also, the soil arising from the trenching process shall be reused in the backfilling after laying the pipeline. The areas shall be re-habilitated and restored as before. This shall not affect the fertility or quality of the soil and it is capable to be re-vegetated since the trench is as deep as 1.5 m.

Besides, the owners of these farms shall be compensated according to the decree No. 318/1993 declared by the Ministry of Agriculture and Reclamation.

- ***CROSSING OF WATER BODIES***

The pipeline project encounters crossing of number of water bodies The impact resembled in disturbance on the water bodies such as turbidity affecting the sediment and marine fauna, beside the risk from laying the pipeline on the canal bed. However, crossing of water bodies and main canals in this project shall not be done by the traditional open-cut method. It shall be done using a new technology named Horizontal Directional Drilling (HDD). Horizontal Directional Drilling (HDD) is a trench-less methodology that provides an installation alternative that can offer a number of benefits over traditional open-cut. HDD can be implemented with very little disruption to surface activities, requires less working space, and may be performed more quickly than open-cut methods. In this technique, a tunnel

El nubaria – el sadat Gas Pipeline

Environmental Impact Assessment



0.0- Executive & Non Technical Summary

is drilled beneath the bed of the water body. From one side, a rig is drilling with an angle between 5° and 30° associated with equipment pulling the pipeline till being settled in the tunnel then the rig exits with the equipment to the other side.

Using this technique, the project has low magnitude and short-term impact and does not significantly affecting the water bodies.

- **SOCIO-ECONOMIC FEATURES**

During construction of the proposed pipeline and associated infrastructure, it is expected that the local and regional economies will be beneficially impacted. The regional economy will benefit primarily by increased employment opportunities and diversification of skill base within the existing workforce. As well as enhanced employment opportunities, the project will create considerable non-technical jobs for local enterprises, such as security for the provision of goods and services. .

III. GENERAL CONCLUSION

Natural gas will be used primarily as a substitute for liquid fuel, therefore it can be concluded that this project will greatly contribute in conserving the air quality through maximizing the use of natural gas which is much cleaner than other conventional fuels in different industrial and domestic sectors. Additionally, the project is economically attractive because the natural gas is cheaper than other fuel sources, it does not require extensive chemical transformation before utilization and the process of replacing other fuels by natural gas in existing installations poses no major problem.

On the other hand, short and long term risks to the environment of the proposed pipeline project will cause no major consequences to the ecosystem. Moreover,

El nubaria – el sadat Gas Pipeline

Environmental Impact Assessment



0.0- Executive & Non Technical Summary

implementation of the recommended mitigation measures and management plan will significantly reduce the potential environmental risks associated with the proposed project.



1-Introduction

1.1 Section 1: Natural Gas Option in Egypt

In a country where is abundant, affordable and the cleanest of fossil fuels, it is increasingly becoming the fuel of choice, gas is gaining tremendous momentum as a core item in our strategy accounting for more than 50 % of Egyptian hydrocarbon . Demand on gas is soaring like never before as many industries are shifting to gas better performance, substantial savings and environmental compliance

The ministry of petroleum is the utilization of gas in all sectors with the implementation of major gas projects covering discovery , delivery and triggering untapped potential urging and encouraging the use of natural gas serving different industries (power generation sector, fertilizer sector, iron and steel, domestic & CNG, industrial cities) while satisfying the local market requirements of natural gas as a fuel, a feedstock for the petrochemical industry, while liquid fuels by natural gas and opening new market for Egyptian natural gas.

The process of maximizing natural gas utilization in Egypt is witnessing outstanding development, rapid progress and foreign investment as a strategic axe through increasing the value added to petroleum products to achieve self-sufficiency of LPG and gas derivatives used as feedstock for the petrochemicals.

The global energy industry focuses increasingly on the exploration and development of natural gas. The development of the know how and the utilization of interactive technology have completely reshaped oil and gas exploration in EGYPT leading to the discovery of a host of new gas fields in the Mediterranean especially the deep waters gas discoveries and the western desert.

We focus increasingly on new technologies for the conservation of gas into marketable products. in response to the energy market change, GASCO has been very keen to play a key role in the gas processing in a bid to achieving self sufficiency of LPG and other gas valuable components and derivatives either as feed stocks for the petrochemical industry or as an export option stimulating a wave of national or international projects, adding new dimensions to the gas industry and giving rise to the establishment or the development of the petrochemical projects in EGYPT. It is a step forward towards achieving integration between all companies working in the gas business

El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



1-Introduction

The aim of the project

The aim of el Nubaria el Sadat pipeline is to increase the amount of natural gas delivered to Upper Egypt and to increase the gas amount supported to Cairo.

1.2 Section 2: About The project

In Egypt, the domestic market for natural gas is currently under-supplied and demand is growing. Due to major recent discoveries, natural gas is likely to be the primary growth engine of Egypt's energy sector for the foreseeable future. Egypt's natural gas sector is now expanding rapidly. In the Nile Delta region, which has become a world-class natural gas basin, the total quantity of natural gas produced from fields and delivered to GASCO reached 43.3 bcm in 2005, achieving 14% development

1.2.1 Quantities of Gas Distributed Through the National Gas Grid

The increase in the quantities of sales gas during 2006 has been reflected on distribution as 43.3 bcm have been distributed through the national gas grid; 35bcm of which for the local market and 8.3bcm for export

1.2.2 Supplying gas to the local market

total amount of natural gas distributed during year 2006 through the national gas grid was 35 bcm, with power generation sector on top of consumers , representing 60% of gas distributed , followed by the rest of the industrial sectors(petroleum, fertilizers , cement, ect...) and finally the commercial sector (residential, CNG ,etc...)the following table shows gas consumption by sector table (1)

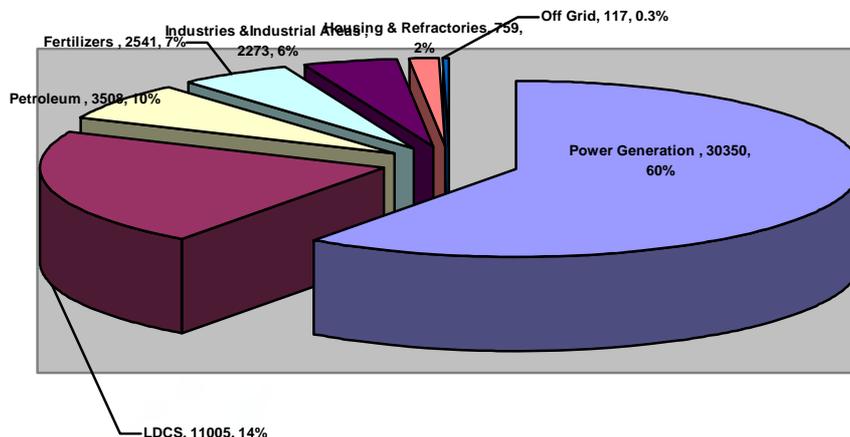
Consumption Sector	Planned	Actual	Percentage Of Planned
Power Generation	16318	14780	91
Local Distribution Companies	9780	11005	113
Petroleum	3387	3508	104
Fertilizers	2604	2541	98
Industries & Industrial Areas	2145	2273	106
Housing & Refractories	749	759	101
Off Grid	97	117	120
Total	35080	34984	99.7

El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



1-Introduction



CONSUMPTION FIG (1)

1.3 Section 3: about Environmental Impact Assessment

We believe in maintaining the delicate balance between our gas business and the environment and that why we are working hard to ensure that both thrive while remaining fully committed to improving our safety and environmental performance. This commitment goes beyond satisfying safety requirements or Regulatory compliance to achieving socio-economic profit and the guarantee of sustainable development while maintaining the profitability of business and projects. In our operations and projects, we insist on selecting best alternatives among those available that may conserve the environment and achieve our objectives of the project balancing economic progress with environmental care and social responsibility. Among the instrumental tools GASCO implement to achieve superior environmental performance is the environmental impact assessment (EIA). This study is concerned with the changes that occur to environment conditions or the occurrence of new environment conditions whether negative or positive that may directly result from certain action or actions, activities, products and service. The domain of this study is selecting best alternatives among those available that may conserve the environment and achieve the objectives of the project.

GASCO has adopted an Environmental Management System (EMS) that, while meeting the highest environmentally recognized standards, identifies potential environmental threats posed by business operations while pursuing our quest for zero accident, zero harm or damage to the environment, properties or people.

El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



1-Introduction

We emphasize safeguarding the safety and health of our staff, partners and contractors working under our umbrella as well the community surrounding us. We offer calculated prediction and a high level of preparedness. We have a contingency plan that ensures maximum preparedness for contingencies and major hazards and quickest response. We also spread awareness among personal as to responsibilities and roles in contingencies

1.3.1 Environmental Considerations of Natural Gas

Recent years witnessed a radical change in the use of sources of energy. All these new ways have been in favor of the hydrogen rich and environmentally friends natural gas. Reconciling energy resources with the environment replacing polluting fuels with natural gas is the core of the strategy geared towards joining forces for maximizing gas utilization through expansion in gas projects and infrastructure, making gas available and affordable for wide spectrum of users, starting from industrial users to car fuelling station.

Composed of at least 90 % methane and small amounts of other hydrocarbons(e.g. ethane, propane and butane), natural gas produces much lower emission levels of CO, CO₂, NO and hydrocarbons than competing fuels when burned in addition to the absence or negligible SO emission during burning. That is why switching to natural gas is mitigation option for green house gas emissions.

1.3.2 Objectives.

The main objectives of this EIA are:

- Developing complete understanding and a clear definition of the proposed project including both construction and operation phases.
- Graining a complete understanding of the affected environment, including both biophysical and socio-economic characteristics
- Conducting an assessment of the potential impacts from the proposed project.
- Recommending the required mitigation measures to eliminate or minimize the potential environmental impacts.
- Reporting the results of the and producing the required documented EIA.

1.3.3 WORK

Work accomplished to produce the report includes:

- Data concerning the prevailing environmental conditions of the study area was collected such as topography, geology, hydrology,etc
- During the baseline environmental survey, the general ecosystem of the study area was described and evaluated
- The pertinent regulations and standards governing the environmental quality was reviewed and presented.

El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



1-Introduction

- The expected environmental consequences from the proposed project were assessed.
- The mitigation measures with an integrated plan for managing the identified environmental hazards and effects were accomplished.
- An environmental monitoring plan for the proposed project was suggested.



2- Environmental Legislation

2.1 INTRODUCTION

The proposed project is subject to a variety of Egyptian regulatory requirements and policies in accordance to the published Egyptian laws. This section illustrates the permits required for the construction and operation of the project from the different agencies, governorates and municipalities. It also briefly describes the responsibilities and obligations of each agency and gives shortcuts on the laws enforced by them and most relevant to the project.

Because the Environmental Impact Assessment (EIA) of a project is mainly required by the Egyptian Environmental Affairs Agency (EEAA) and the Egyptian Natural Gas Holding Company (EGAS) and GASCO HSE policy, found herein this section an overview of the requirements of the guidelines of both EEAA and EGPC (EGAS) concerning EIA. Also special attention was paid to Law 4/1994 (Environment Law) and its Executive Regulations (ER) issued by the Prime Minister's Decree No. 338 of 1995. (As Amended By Decree No.1741 Of the Year 2005) The articles of the law and that of the ER which are most relevant to the project are explained in this section. In addition, the maximum permissible limits of the emissions and maximum exposure periods are outlined below.

2.2. ADMINISTRATIVE RESPONSIBILITIES OF EGYPTIAN AGENCIES

Besides, to their ultimate major responsibilities in the different sectors, a lot of Egyptian Ministries and Authorities have an implicit mandate on the environment. They are responsible for the enforcement of a set of laws which either directly or indirectly give hand in the protection of the environment. But, when dealing specifically with EIA, its purpose, role, and how officially to be established before the commencement of the project for the licensing of the construction and operation activities, the responsibilities of three major authorities should be particularly outlined, the Egyptian Environmental Affairs Agency (EEAA), the Egyptian Natural Gas Holding Company (EGAS) and the Governorates and Local Authorities.

2- Environmental Legislation

2.2.1. EGYPTIAN ENVIRONMENTAL AFFAIRS AGENCY (EEAA)

The EEAA is established by virtue of law No.4 of the year 1994. The EEAA is responsible for the enforcement of law 4/1994 for the environment, environmental management plans, environmental data collection, pollution prevention & control and adaptation of International Environmental Agreements. It operates as the central environmental enforcement agency and coordinates between government entities. Regarding the EIA, responsibilities of EEAA are summarized in the following:

EEAA is responsible, in agreement with EGPC, for issue a decree identifying the elements, designs, specifications and bases (EIA Guidelines) in the light of which the EGAS shall assess the environmental impact of the project for which the license is required.

The Board of directors of the EEAA shall develop the selection criteria for consultants to be assigned by the EEAA to review the EIA.

On receiving the documents of EIA sent by the developer via the Competent Administrative Authority (EGAS), EEAA undertakes the evaluation of these documents and submits to EGAS its opinion and possible proposals for measures to be taken in order to ensure the protection of the environment within 60 days of the EEAA's receipt of the completed documents. Failure to do so is considered as an approval of the assessment.

Legally, the developer has the right to appeal the final results of EEAA about the EIA evaluation when the decision is either approval with certain condition or disapproval. In such a case, EEAA is responsible for the invitation of the Appeal Committee to convene within fifteen days as of the date of the Agency's receipt of the written objection.

2.2.2. EGYPTIAN NATURAL GAS HOLDING COMPANY (EGAS)

The E-GAS is responsible for licensing gas pipelines construction & operation and processing activities. Concerning the EIA, EGAS has particular responsibilities represented by the following:

2- Environmental Legislation

The EGPC /EGAS, in coordination with EEAA, have a role in issuing the EIA Guidelines.

On receiving the EIA documents from the developer, the EGAS should undertake the register of the documents and review whether information included in the EIA study complies with the EIA guidelines. The EGAS should formally submit the applicant's documents to the EEAA for review and evaluation.

The EGAS is responsible for the notification of the developer by registered letter with the comment of revision and the final result of the evaluation of EIA when received from the EEAA.

After that, EGAS is responsible to ensure the implementation of the decision.

2.2.3. GOVERNORATES

The governorates (*table2*) have the responsibility for implementation, monitoring and enforcement of the national laws. They are also responsible for the specification of a land to serve as a landfill for dumping of any waste materials either industrial or domestic. EEAA is responsible for the establishment of regional offices in each governorate. These offices, in coordination with the governorate, shall undertake the requirement and evaluation of the EIAs of projects proposed to be established in the governorate. It is worth mentioning that the governorates have the right to refuse the establishment or operations of any project within its boundaries whenever find that the project seriously affects the residents or drastically consumes its natural resources.

Table (2) represents governorates, ministries and their responsibilities

Agency	Responsibility
<u>Ministry of petroleum and mineral resources</u>	<ul style="list-style-type: none"> ▪ <u>Management of Egypt's oil resources</u> ▪ <u>Approval of E & P licensing</u> ▪ <u>Licensing disposal of petroleum wastes</u> ▪ <u>Approval of oil sector environmental activities</u>
<u>Egyptian natural Gas holding company (EGAS)</u>	<ul style="list-style-type: none"> ▪ <u>Operational management of Egypt's gas resources</u> ▪ <u>Management of Egypt's JV gas companies</u> ▪ <u>New gas development approvals</u> ▪ <u>Approvals of natural gas sector environmental activities</u> ▪ <u>Coordination of gas sector emergency response</u>
<u>Egyptian Environmental Affairs Agency (EEAA)</u>	<ul style="list-style-type: none"> ▪ <u>Implementation of environmental law (law4)</u> ▪ <u>Environmental management and data collection</u> ▪ <u>Pollution prevention and control</u>

2- Environmental Legislation

	<ul style="list-style-type: none"> ▪ <u>Environmental policy and planning</u> ▪ <u>Improvement of the natural oil spill and pollution emergency plans</u> ▪ <u>Administration of the natural protectorates</u> ▪ <u>Development of coastal management plan</u>
<u>Ministry of water Resources and Irrigation</u>	<ul style="list-style-type: none"> ▪ <u>Provision of irrigation and drainage infrastructure water resource management</u> ▪ <u>Protection of lakes and River Nile</u> ▪ <u>Monitoring and management of water quality</u>
<u>Municipalities</u>	<ul style="list-style-type: none"> ▪ <u>Local public administration and management</u>

2.3. LAW NO. 4 OF 1994 AND ITS EXECUTIVE REGULATIONS

2.3.1 LAW NO. 4 OF 1994

Within the frame work of sustainable development and the increasing need to develop the country without causing any depletion or deterioration to our limited natural resources, Egypt has issued Law No. 4 of 1994 concerning the protection of the environment, the objectives of this law has not confined to addressing pollution problems emanating from existing establishments, but also to involve new establishments/factories including expansions of the existing ones.

Because EIA aims to insure the protection and conservation of the environment and natural resources including human health aspects against uncontrolled development, Law 4/1994 states that new establishments or projects, expansions or renovations of existing establishments must be subjected to and environmental impact assessment before a permit is issued.

Measures concerning the assessment of environmental impact of establishments or projects are stipulated in articles No.: 19, 20, 21, 22 & 23 of Law 4/1994

Article: 19

The competent Administrative Authority or the Authority granting the Licence shall evaluate the environmental impact of the establishment for which the licence is requested, according to the elements, designs, specifications, and bases to be issued by the Environmental Affairs Agency in agreement with the competent administrative authorities. The Executive regulations of this law shall determine the installations to which the provisions of this article shall apply.

Article: 20

The competent administrative authorities, or the authority granting the Licence shall send a copy of its evaluation of the environmental impact referred to in the previous article

2- Environmental Legislation

to the Environmental Affairs Agency to announce its opinion and evaluate the proposals required for implementation in the field of preparations and systems required for treating the negative environmental effects.

Such authorities undertakes assuring the implementation of such proposals. The Environmental Affairs Agency shall provide the competent administrative authority or the authority granting the licence with its view concerning this evaluation, within a period of 60 days at the most from the date of receiving this evaluation, otherwise the failure to provide the reply shall be considered as approving the evaluation.

Article: 21

The competent administrative authority shall notify the owner of the establishment with the result of the evaluation, by virtue of a registered letter with acknowledgment of receipt. He may object to this result, in writing within Thirty days from the date he is notified of such result, before a Committee to be formed by a Decree of the Minister concerned with environmental affairs. The Environmental Affairs Agency, the Owner of the Establishment, and the competent authority or the authority granting the licence shall be represented on this Committee. The Executive regulations shall determine the powers of this Committee and the procedures of objection, as well as the procedures of its work.

Article: 22

The owner of the establishment - according to the provisions of this law - shall keep a register showing the impact of the establishment's activity on the environment. The Executive regulations shall set a Form of this register, and the time schedule for the establishments' commitment to hold it, as well as the data and information to be recorded therein. The Environmental Affairs Agency shall be concerned with monitoring the data of the register to ensure their conformity to reality, and with taking the necessary samples as well as carrying the proper tests to show the impact of the establishment's activity on the environment, in addition to determining the extent and degree of its compliance with the criteria set for the protection of the environment. If it is transpired the existence of any violations, the Agency shall notify the competent administrative authority to task the owner of the establishment with correcting these violations promptly. If he fails to act accordingly within Sixty Days, the Agency may then, in agreement with the competent administrative authority, take the necessary legal and judiciary procedures to stop the violating activity and claim compensations as appropriate for treating the damages resulting from these violations.

Article: 23

Expansions or renovations in already existing installations shall be subject to the same provisions as prescribed in articles (19), (20), (21) and (22), of this law.

2- Environmental Legislation

2.3.2. PRIME MINISTER'S DECREE NO. 338 OF THE YEAR 1995

On 28th February ,1995, the Egyptian Official Journal "al-wakaa al masriya" /Government Bulletin-Issue No.51 has published the Prime Minister's Decree No. 338 /1995 promulgating the Executive Regulations of, Law No. 4 of 1994 on Environment .(As Amended By Decree No.1741 Of the Year 2005)

The objectives of these regulations represented by, but not limited to, the following:

- To specify the establishments that should undertake an assessment of the environmental impact.
- To specify the assignments of the Appeal Committee and its operating procedures as well as the complaint procedures.
- To define the specifications and norms which must be complied with by industrial establishments allowed discharging treated degradable polluted substances.
- To specify the non-degradable polluting substances which are prohibited from discharge into the water environment.
- To specify the permissible limits of air pollutants in emissions.
- To specify the permissible limits of sound intensity and safe exposure periods.

To regulate the procedures and conditions that shall be followed in cases of construction of any installations on or near the seashore.

Besides the aforementioned, articles of Law 4/1994 concerning the EIA, they are complemented by the provisions of articles No. 10, 11, 12, 13, 14, 15, 16, 17, 18 & 19 of the Executive Regulations (ER).

Article: 10

The concerned administrative entity, or the entity granting the license shall assess the environmental effect of the establishment requested to be licensed or intended to be established, based on the study submitted by the establishment or the entity establishing it, according to the elements, designs, specifications, bases, and guide standards of pollution specific limits, as issued by the Environmental Affairs Agency, in agreement with the concerned administrative entity. The assessment shall comprise a statement of all elements of the establishment's self-monitoring system, and the pollution limits requested to be licensed. The Environmental Affairs Agency shall verify the foregoing whenever necessary.

2- Environmental Legislation

Article: 11

The provisions of article (10) of these regulations shall apply to installations and establishments as indicated in annex no.(2) to these regulations.

Article: 12

The license applicant shall attach to his request an adequate statement on the establishment comprising the data included in the form to be provided by the Environmental Affairs Agency with the concerned administrative entity, the limits of the pollutants requested to be licensed, and all elements of the establishment's self-monitoring system. The Environmental Affairs Agency shall provide a register comprising copies of these forms, the results of assessment and the pollution limit set for the establishment, and the Agency's demands from the owner of the establishment.

Article: 13

The Environmental Affairs Agency may resort to the assistance of any of the specialized people whose names shall be issued in a statement to be set by the Agency according to the criteria to be set by the Board of the Agency, in order to express their view in assessing the environmental effect of the establishment intended to be established and also for which the license is requested.

Article: 14

The competent Administrative entity shall notify the owner of the Establishment of the assessment result, by virtue of a registered letter with acknowledgment of receipt. He may object to this result, in writing, within thirty days from the date of the notification, before the Permanent Verification Committee whose formation shall be constituted by virtue of a decree of the Minister Concerned With Environmental Affairs, with a Counsellor of the State Council as its Chairman, and the membership of each of the following :

- _____ A delegate from the Environmental Affairs Agency to be nominated by the Executive Head of the Agency.

The owner of the Establishment, or his delegate by virtue of an official power of attorney.

A representative of the Competent Entity or the Entity granting the License if it is not the Competent Entity.

Three experts to be selected for the membership of the Committee upon their nomination by the Executive Head of the Agency, for a period of three years.

The Committee may form among its members and others, sub-committees, to be assigned the study of objections as referred thereto and raise their reports to the

2- Environmental Legislation

Committee. In Exercising their tasks, these Sub-Committees may resort to whoever is considered to be expedient for the purpose, and the Committee shall issue its decision within Sixty Days from the date of receipt of the objection papers duly fulfilled.

Article: 15

The Permanent Verification Committee prescribed in Article (14) of these regulations shall be concerned with looking into the objections referred to it concerning the assessment result, or the proposals required to be implemented as considered necessary by the Environmental Affairs Agency, and shall announce its view with regard to these objections, concerning the controls prescribed in article (10) of these regulations. The objection shall be submitted to the Environmental Affairs Agency, in writing, fulfilling the reasons for the objection, and the legal and scientific grounds on which the owner of the project is based. He shall also attach to his objection such documents as regarded by him to be in support of the aspects of his objection.

Article: 16

The Committee shall meet upon the invitation of the Executive Head of the Environmental Affairs Agency, within fifteen days from the date the Agency receives the objection in writing. A representative of the Agency to be delegated by the Executive Head shall draw up the minutes of the meeting. He shall not have any counted vote concerning the discussions taking place. The decision of the Committee shall be issued with the majority of votes. The Minutes of the Meeting shall be signed by all attending members.

Article: 17

The owner of the establishment shall - according to the provisions of these regulations - maintain a register indicating the impact of the establishment's activity on environment, and in which the following data shall be recorded

- Emissions emanating there from or drained thereby and the limits thereof.
- Specifications of the elements resulting from the treatment process, and the efficiency of the treatment units used for the purpose.
- Follow-up as well as environmental safety and self-monitoring procedures applied in the Establishment.
- Periodical tests and measurements, and the number of samples, together with the time and place of taking them as well as taking measurements and making analyses results thereof.
- The officer in charge of follow-up.

The Register shall be provided according to the form indicated in annex no. (3) Attached to these regulations.

2- Environmental Legislation

The owner of the Establishment or his delegate shall notify the Environmental Affairs Agency forthwith by a registered letter with acknowledgment of receipt, of any deviation in the standards, specifications and limits of emitted or drained pollutants, and the procedures taken to correct same.

Article: 18

The Environmental Affairs Agency shall be concerned with following up the data of the register to ensure their conformity to actual reality, and the compliance of the establishment with the self-monitoring plan, and the extent to which the equipment thereof are sound and the persons in charge of monitoring are efficient. The Agency shall take necessary samples and conduct suitable tests to show the impact of the Establishment's activity on environment in addition to determining the extent to which such samples are in conformity to the guideline standards set for protection of the environment.

Such follow-up shall take place periodically at least once a year, or whenever necessary, and a report on each follow-up shall be raised and deposited with the competent sector within the Agency, and be duly signed by the officer in charge of surveying and testing, as well as the date of survey and test. If it transpires that the establishment does not maintain the environmental register, or that it does not record its data regularly, or if any other violations are detected, the Agency shall notify the competent administrative entity to task the owner of the establishment by registered letter with acknowledgment of receipt, to correct these violations promptly, as dictated by the norms of industry. If he fails to comply with the foregoing within sixty days, the Executive Head, in coordination with the competent Administrative Entity shall apply the following procedures:

- 1- Granting the establishment an additional period to rectify the violations along with incurring the compensations to be agreed upon therewith for the damages resulting from such violations.
- 2- Closing down the Establishment.
- 3- Suspending the violating activity, pending the violations is rectified

Suing in court for suitable compensations to remedy the harms resulting from the violations. These establishments shall maintain the register duly fulfilled according to the form prescribed in article (17) of these regulations, in a permanent manner. On renewing its data, the Establishment shall maintain the register for a period of ten years, to be reckoned from the date the delegate of the Environmental Affairs Agency signs the register to confirm having carried out the survey.

Article: 19

The expansion of renewals carried out in an existing establishment shall be subject to the same provisions prescribed in articles Nos. (19), (20), (21) and (22) of the foregoing Law on Environment.

Changing the operating machines pattern of production, increasing the number of workers in a way exceeding the capacity of the place of work, or any essential modifications in the building of the Establishment, and in particular those connected with

2- Environmental Legislation

the system of ventilation, changing the site of work, or other like modifications which might result in the increase of the limits of pollutants, or a harmful impact on environment or on the workers of the Establishment, shall be considered same as expansions or renewals 17

The concerned administrative entity, or the entity granting the license may, spontaneously or upon the request of the environment affairs agency, invalidate the licenses issued to the establishment non-complying with the provisions of articles Nos. 19 and 20 of law no. 4 of the year 1994, and articles Nos. 10 and 12 of the present regulations, or suspend the validity of the license pending completion of the procedures of assessing the environmental effect of the establishment according to the provisions prescribed in the said articles

2.3.3 STANDARDS OF ANTICIPATED IMPACTS AS SPECIFIED IN ER

The legislative framework for air, water & soil pollution is included in Law No. 4/1994 and its Executive Regulations (Decree 388/95) .(As Amended By Decree No.1741 Of the Year 2005) The law establishes regulations for air quality to protect health and environment. The ER, as described before, specifies the maximum permissible limits of pollutants which may be generated from the various industrial activities and affect the environment parameters and defines the standards that must be obeyed. Hereinafter, a discussion of the limits of the pollutants that are likely generated from the proposed project and illustration of the maximum standards in accordance to those mentioned in the Executive Regulations.

2.3.3.1 ATMOSPHERIC EMISSIONS AND AIR QUALITY

The Egyptian law for environment (Law 4/1994) stipulates that for granting a permit for the establishment of a project, the site chosen should be appropriate for its activity to ensure compliance with the accepted limits of air pollutants, and that it should be observed that the total pollution resulting from all the establishments in one area lies within the permissible limits. Thus the project, while practicing its activities, must ensure that no leaked or emitted air pollutants exceed the maximum permissible levels specified in the Executive Regulations of the law. The law also prohibited the use of machines, engines or vehicles that emit exhaust fumes exceeding the limits set by the Executive Regulations. Tables (2.1, 2.2 & 2.3) set

2- Environmental Legislation

out the maximum permissible limits of air pollutants in emission as passed in the ER of the Law.

Table (3) The Maximum Limits Of Emission From Fuel Burning Sources

POLLUTANT	MAXIMUM PERMISSIBLE LIMIT
Smoke	<u>250 mg/m³</u>
Suspended Ashes	
<u>Sources in urban areas or near residential areas.</u>	<u>250 mg/m³</u>
<u>Sources far from inhabited urban areas</u>	<u>500 mg/m³</u>
<u>Burning of waste</u>	<u>500 mg/m³</u>
Sulphur Dioxide	
<u>Existing</u>	<u>4000 mg/m³</u>
<u>New</u>	<u>2500 mg/m³</u>
Aldehydes	
<u>Burning of waste</u>	<u>20 mg/m³</u>
Carbon Monoxide	
<u>Existing</u>	<u>4000 mg/m³</u>
<u>New</u>	<u>2500 mg/m³</u>

Table (4) Maximum Limits Of outside Air Pollutants (micrograms/m³)

POLLUTANT	MAXIMUM LIMIT	EXPOSURE PERIOD
<u>Sulphur Dioxide</u>	<u>350</u>	<u>1 hr</u>
	<u>150</u>	<u>24 hrs</u>
	<u>60</u>	<u>1 year</u>
<u>Carbon Monoxide</u>	<u>30 mg/m³</u>	<u>1 hr</u>
	<u>10 mg/m³</u>	<u>8 hrs</u>
<u>Nitrogen Dioxide</u>	<u>400</u>	<u>1 hr</u>
	<u>150</u>	<u>24 hrs</u>
<u>Ozone</u>	<u>200</u>	<u>1 hr</u>
	<u>120</u>	<u>8 hrs</u>
<u>Suspended Particulate</u> <i>(to be measured as black smoke)</i>	<u>150</u>	<u>24 hrs</u>
	<u>60</u>	<u>1 yr</u>
<u>Total Suspended Particulate</u>	<u>230</u>	<u>24 hrs</u>
	<u>90</u>	<u>1yr</u>
<u>Thoracic Particles (PM₁₀)</u>	<u>70</u>	<u>24 hrs</u>
<u>Lead</u>	<u>1</u>	<u>1yr</u>

Table No. (5) Maximum Limits Of Emitted Total Solid Particles

2- Environmental Legislation

<u>KIND OF ACTIVITY</u>	<u>MAXIMUM LIMIT FOR EMISSIONS (MG/ M3 IN EXHAUST)</u>
Petroleum Industries and Oil Refining.	100

Table (6) Maximum Limits of emissions (exhaust) from vehicle engines

Gasoline and diesel vehicles:

<u>Kind of vehicle fuel</u>	<u>Pollutants</u>	<u>Vehicles manufactured before the year 2003</u>	<u>Vehicles manufactured starting from the year 2003</u>	<u>Gauge methods</u>
<u>Gasoline</u>	<u>HC ppm</u>	<u>900 parts per million</u>	<u>600 parts per million</u>	<u>At the idling speed (600-900rotationsper minute)</u>
	<u>CO %</u>	<u>4.5 % of the volume</u>	<u>2.5 % of the volume</u>	<u>At the idling speed (600-900rotations per minute)</u>
<u>Diesel</u>	<u>Opacity</u>	<u>30 %</u>		<u>At the maximum acceleration</u>

2- Environmental Legislation

Table (7) Maximum limits for permissible Pollution inside work places and closed locations due to the type of each industry

Ser. No.	Substance	Chemical Formula	CAS NO ISBN	LIMITS				Remarks		
				Average of concentration in 8 hours		Limit of exposure for a short time			Maximum Limit	
				Part/million	Mg/m/m ³	Part/million	Mg/m/m ³		Part/million	Mg/m/m ³
1	Carbon disulphide	CS ₂	0-15-75	10	31	-	-	-	+ Skin	
2	Carbon dioxide	CO ₂	9-38-124	5000	9000	30000	45000			
3	Carbon monoxide	CO	0-08-630	25	29					
4	Carbon black	C	4-86-1333		3.5				Total dust	
5	Gasoline	Mixture of volatile hydro carbonates	9-61-8006	300	890	500	1480		M2	
6	Liquefied petroleum gas, (LPG)	Propane, butane, isobutane, propylene, butelenes and mixtures thereof	7-85-68476	1000	1800					
7	Nitric Oxide	NO	9-43-10102	25	31					
8	Nitrogen dioxide	NO ₂	0-44-10102	3	5.6	5	9.4			
9	Sulphur dioxide	SO ₂	5-09-7446	2	5.2	5	13			
10	Welding fumes (NOS)				5					
11	- Hard wood as beech & oak -Soft wood				1					
					5		10			

2- Environmental Legislation

2.3.3.2 NOISE LEVELS

Law 4/1994 stipulates that all entities while performing production or other activities and using tools or equipment must abide by the permissible limits of sound intensity. Authorities issuing licenses for noise emitting sources must monitor and ensure that total sound produced from fixed sources within one area being within the permissible limits. The permissible limits of sound intensity and the permissible time limits for exposure to said sound as defined by ER are set out in tables (7; 8; 9; 10).

Table (8) Maximum Permissible Limits Of Sound Intensity Inside Places Of Productive Activities

	<u>Place And Activity</u>	<u>Maximum Limit Permissible For equivalent noise intensity L Aeq in Decibel (A)</u>
1.	<u>Places of work with shifts up to 8 hours, with the aim of limiting noise hazards to the hearing Sense.</u>	<u>90</u>
2.	<u>Places of work which require hearing sound signals, and good hearing of speech.</u>	<u>80</u>
3.	<u>Work rooms for computer or typewriters or the like.</u>	<u>70</u>
4.	<u>Work rooms to follow up, measure and adjust Operation.</u>	<u>65</u>
5.	<u>Work rooms for activities which require routine Mental concentration, and control rooms.</u>	<u>60</u>

* A : intensity of noise not exceeding 90 dB during a daily work shift

Table (9) The Maximum Permissible Periods For Exposure To Noise At Work Premises

<u>Noise Intensity level decibel (A)</u>	<u>95</u>	<u>100</u>	<u>105</u>	<u>110</u>	<u>115</u>
<u>Period of Exposures (Hours)</u>	<u>4</u>	<u>2</u>	<u>1</u>	<u>1/2</u>	<u>1/4</u>

2- Environmental Legislation

Table (10) Maximum Permissible Exposure Periods (Number Of Knocks During The Daily Shift) Depending On The Noise Intensity

<u>Noise intensity (Decibels)</u>	<u>Number of Permissible Knocks During Daily Working Hours</u>
<u>135</u>	<u>300</u>
<u>130</u>	<u>1000</u>
<u>125</u>	<u>3000</u>
<u>120</u>	<u>10000</u>
<u>115</u>	<u>30000</u>

The period of exposure to intermittent noise (number of knocks during the daily shift) depends on the noise intensity, according to the previous table.

Noise resulting from heavy hammers shall be considered intermittent if the period between each knock and the next one is one second or more. If the period is less than that, the noise shall be considered continuous, in which case the foregoing items shall apply thereto.

Table (11) Maximum Permissible Limits For Noise Intensity In Different Zones

<u>KIND OF AREA</u>	<u>MAXIMUM LIMIT OF EQUIVALENT NOISE INTENSITY L Aeq IN DECIBEL</u>		
	<u>All Day</u>	<u>Evening</u>	<u>All Night</u>
	<u>7am- 6pm</u>	<u>6pm-10pm</u>	<u>10pm-7am</u>
<u>Rural residential areas (hospitals and gardens)</u>	<u>45</u>	<u>40</u>	<u>35</u>
<u>Residential suburbs , with the existence of little movement</u>	<u>50</u>	<u>45</u>	<u>40</u>
<u>Town residential areas</u>	<u>55</u>	<u>50</u>	<u>45</u>
<u>Residential areas having some workshops or commercial activities or on the public road</u>	<u>60</u>	<u>55</u>	<u>50</u>
<u>Trading and administrative areas and down town</u>	<u>65</u>	<u>60</u>	<u>55</u>
<u>Industrial zones (Heavy industries)</u>	<u>70</u>	<u>65</u>	<u>60</u>

2.3.3.3 WASTE MANAGEMENT

Law 4/1994 strictly prohibits the dumping, treating or burning of garbage and solid waste except in especially designated places which must be far from residential, industrial and agricultural areas and waterways.

2- Environmental Legislation

Law 4/1994 also stipulates that when carrying out activities requiring exploration, digging, construction or demolition work, or while transporting waste substances or soil, necessary precautions must be taken to store or transport this waste in a safe way to prevent it from being dispersed. The licensing authority for building or demolition should monitor the following:

- Safe stacking of waste on site so that no impediment to traffic and pedestrian movement may take place.
- Transportation of waste substances and soil resulting from digging, demolishing and constructing work in special containers or receptacles by using licensed trucks for this purpose.

2.3.3.4 WATER POLLUTION

Giving the consideration to the provisions of Law No. 48 of 1982 concerning the protection of the River Nile, and its Executive Regulations, the analysis of effluent generated from the hydrostatic test shall be done versus the parameters indicated hereunder.

Table (12) Maximum Permissible Limits and Specifications of water quality

<u>PARAMETER</u>	<u>MAXIMUM LIMITS AND SPECIFICATIONS (MG/L- UNLESS OTHERWISE INDICATED)</u>
<u>Temperature</u>	<u>Not more than 10 degrees over existing level</u>
<u>pH</u>	<u>6-9</u>
<u>Color</u>	<u>Free of colored agents</u>
<u>Biochemical Oxygen Demand</u>	<u>60</u>
<u>Chemical Oxygen Demand (Dichromate)</u>	<u>100</u>
<u>Total Dissolved Solids</u>	<u>2000</u>

2.4. EEAA/ EGPC GUIDELINES FOR EIA

The Executive Regulations relating to Law No. 4 identifies establishments or projects which must be subjected to an Environmental Impact Assessment based upon the following main principles:

2- Environmental Legislation

1. Type of activity performed by the establishment.
2. Extent of natural resources exploitation.
3. Location of the establishment.
4. Type of energy used to operate the establishment.

The numbers of projects subject to this provision are many and will form a heavy burden to administrative authorities and the EEAA. A flexible system for the management of EIA projects has therefore been developed in order to use limited economic and technical resources in the best possible way.

The system encompasses a flexible screening system and projects are classified into three groups or classes reflecting different levels of Environmental Impact Assessment according to severity of possible environmental impacts.

1. **Category 'A'** list projects for establishments/projects with minor environmental impact:
2. **Category 'B'** list projects for establishments/projects which may result in substantial environmental impact.
3. **Category 'C'** list projects for establishments/projects which require complete EIA due to their potential impacts.

With respect to the GASCO project, a full EIA is required as the project is categorized under the Category 'C' as described in the Egyptian Guidelines for the Environmental Impact Assessment issued by EEAA.

2. 5. THE APPEAL SYSTEM

The decision taken by the authorities regarding the assessment and/or the proposals required to be implemented as considered necessary by the EEAA can be appealed to the Permanent Appeals Committee by developer within 30 days after receiving such decision. The classification according to environmental impacts of the project (*Category 'A'*, *Category 'B'* or *Category 'C'*) cannot be appealed.

The appeal must be presented in writing to the EEAA and sent by registered letter with acknowledgment of receipt. The appeal must fulfil reasons for the objection,

2- Environmental Legislation

legal and scientific grounds on the part of the project's owner. Documents supporting the appeal shall be attached.

The Permanent Appeals Committee has to make its decision within 60 days from the date of receiving the appeal documents.

2.6. PERMITS REQUIRED FOR THE CONSTRUCTION AND OPERATION OF THE PIPELINES

For the purpose of constructing and operating the pipelines, *GASCO* shall obtain number of permits from several governorates and authorities mainly: *Table (13) authority/governorate.*

<u>AUTHORITY/GOVERNORATE</u>	<u>Gas pipeline</u>
1. <u>Military forces</u>	✓
2. <u>local council</u>	✓
3. <u>city authority</u>	✓
4. <u>approval for determination of valve room area</u>	✓
5. <u>Egyptian telecom</u>	✓
6. <u>General authority for country land</u>	✓
7. <u>General authority for stone pit</u>	✓
8. <u>General authority for agricultural drainage</u>	✓
9. <u>Egypt co. For power transmission</u>	✓
10. <u>Agricultural local administrative authority</u>	✓
11. <u>General authority for water resources and irrigation</u>	✓
12. <u>The holding company for potable water & sanitary drainage</u>	✓
13. <u>General authority for roads& bridges& land transport</u>	✓
14. <u>Egyptian railways</u>	✓

2.7 GASCO HSE MANAGEMENT SYSTEM PROFILE :

GASCO is the Egyptian natural gas company, one of Egyptian natural gas holding (EGAS) companies, GASCO working in the field of gas processing, transportation, and distribution. GASCO was established in March 17, 1997 in accordance with the investment law number 230 of year 1989 amended by law number 8 of year 1997.

GASCO has prepared and implemented an HSE Management System, which ensures that the occupational health, safety & environmental effects of its activities conform to the stated HSE policy and associated objectives and targets.

2- Environmental Legislation

The objectives of the HSE Management System are to meet the requirements of the GASCO HSE policy, health, safety and environment matters, and all of the related regulations.

This system is fully documented in accordance with ISO 14001 & OHSAS 18001 and is supported with documented procedures at all levels (Annex 4).

2.8. GASCO HSE EXPECTATIONS

GASCO Management must ensure that the following expectations are met in the following areas:

Leadership and Commitment to HSE

- Model positive HSE behaviour and provide a personal example to staff.
- Establish clear HSE goals, objectives, roles and responsibilities.
- Establish measures of HSE performance and allocate necessary resources.
- Establish an appropriate and properly resources company organisation.

Risk Assessment and Management

- Processes are in place to identify all hazards and risks.
- Hazards are classified and appropriate risk assessments are carried out.
- Residual risks are clearly defined for control actions.
- Company risk assessment knowledge and practices are appropriate and up to date.

People, Training and Behaviours

- Open communications exist between GASCO and its employees and stakeholders.
- Leaders act positively to foster an open and listening culture.
- The workforce knows and understands their roles and responsibilities.
- The workforce understands occupational and operational risks.
- A competence-based skills training programme is in place.
- A behaviours-based HSE training programme is in place.

Facilities Design and Construction

- Baseline environmental data is collected early and full EIA is conducted.
- Positive impacts are maximised while negative impacts mitigated.
- Natural resources are identified and conserved.
- Management systems are in place to ensure technical integrity standards.
- Management systems are in place to assure HSE performance.
- Local regulatory requirements are met or exceeded. QA and inspection systems are in place to ensure specification compliance.
- Change management programmes and procedure are in place.
- Changes in codes, regulations and modern HSE practices are tracked and applied.
- Documented pre start-up reviews are carried out by competent people.

Working with Contractors

- Selection and pre-qualification includes HSE competence and Company's rights of assurance and intervention.
- Hazards and risks associated with contractor's scope of work are identified and managed.

Operations and Maintenance

- Key operating parameters are established and regularly monitored.
- Workforce understands the parameters and operating limits.

2- Environmental Legislation

- Management systems are in place to assure HSE performance.
- Local regulatory requirements are met or exceeded.
- Clear start-up, operating maintenance and shut down procedures are in place.
- Designated authorities are identified and briefed.
- Risks introduced by simultaneous operations are assessed and managed.
- Pollution prevention and waste management plans are in place.
- Impacts from waste, emissions, noise and energy are monitored and minimised.
- QA Programmes exist to ensure that changes occur without loss of integrity.
- Regulations, permits codes/standards are known and communicated.

Information and Documentation/Records

- A documentation needs and retention policy is established.
- The use of paper records is minimised.
- A comprehensive document control and tracking system is in place
- Regulations, codes/standards and revisions are accessible.
- Employee medical records are confidentially kept.

Crisis and Emergency Planning

- Residual risk/threat scenarios for all locations are defined.
- Regulatory requirements for all locations are known.
- Crisis and emergency plans, resources and procedures are in place.
- Testing of plans and staff competence by conducting regular drills.
- Operational change management arrangements cover emergency plans.

Incident analysis and Prevention

- A positive climate exists in which hazards and risks are openly discussed.
- All staff required and encouraged to report accidents, incidents and near miss events.
- All incidents, accidents and near miss events are fully recorded and analysed.
- Root causes are identified and that lessons learned are fully disseminated.
- The lessons learned are applied to prevent future problems.

Assessment, Assurance and improvement

- Create a culture of continuous improvement in the Company.
- Establish HSE performance indicators and make them known.
- Ensure that appropriate QA programmes apply at all stages.
- Ensure periodical Company/Sponsor review and audit programmes are in place.
- Ensure that GASCO participates in industry mutual support groups

U.3.1 INTRODUCTION:

This section will describe the construction activities of el Nubaria el Sadat pipeline including route description ,the construction techniques and the patrolling philosophy of the pipeline

The main stream of natural gas coming from the national network is used to feed the pipeline after it has been filtered

3.2 BASIS OF DESIGN

3.2.1 DESIGN GAS COMPOSITION AND FLOW RATE

The compositions of the gas coming from the national network are indicated in the table below:- table(14)

		Lean Gas Composition	Rich Gas Composition
Carbon Dioxide	CO ₂	0.150	0.3.990
Nitrogen	N ₂	0.760	0.050
Oxygen	O ₂	0.000	0.000
Hydrogen	H ₂	0.000	0.000
Methane	CH ₄	97.313	80.224
Ethane	C ₂ H ₆	1.710	10.069
Propane	C ₃ H ₈	0.040	3.880
iso-Butane	i-C ₄ .	0.020	0.570
n-Butane	n-C ₄ .	0.0	0.6899
iso-Pentane	i-C ₅	0.000	0.2100
n-Pentane	n-C ₅	0.000	0.1200
n-Hexane	n-C ₆	0.000	0.1200
n-Heptane	n-C ₇	0.000	0.0700
n-Octane	n-C ₈	0.000	0.00
n-Nonane	n-C ₉	0.000	0.000
Total		100.000	100.000
Contaminants		Gas delivered will be commercially free of materials and dust or other solid or liquid matter which may Interfere with the operation of lines,	

El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment

3 : project Description



3-3 route description



The pipeline starts from the valve room in front of EL NOUBARIA power station (this room is the end of ABO HOMOS EL NOUBARIA pipeline) with 69 Km length and 36" diameter, then it extends to the east parallel to the north wall of EL NOUBARIA power station, then it turns to the west parallel to asphaltic road in front of Othman Ibn Afan village, El Fattah village and Abu Baker El Sadiek village until it reaches El Maged village, then turns west in front of the power station and extends about 7 Km parallel to the asphalted road, then turns south parallel to Wadi El Natroun road until crossing with Cairo-Alex desert road and extends parallel to SUMID pipelines in the eastern south direction this area was prepared before for oil and gas pipelines so there are no natural protectorates nor obstructions only some private farms of low population are found , the pipeline will cross some subsidiary roads of low traffic density one of them leads to EL Anba Makkar monastery, after that the pipeline extends until it reaches the off take of El Sadat city on Dahshour El Ameria pipeline .

Line route and listb of crossings of el nubaria –el sadat is shown on the attachments

Cost of el nubaria –el sadat project is shown on the attachments

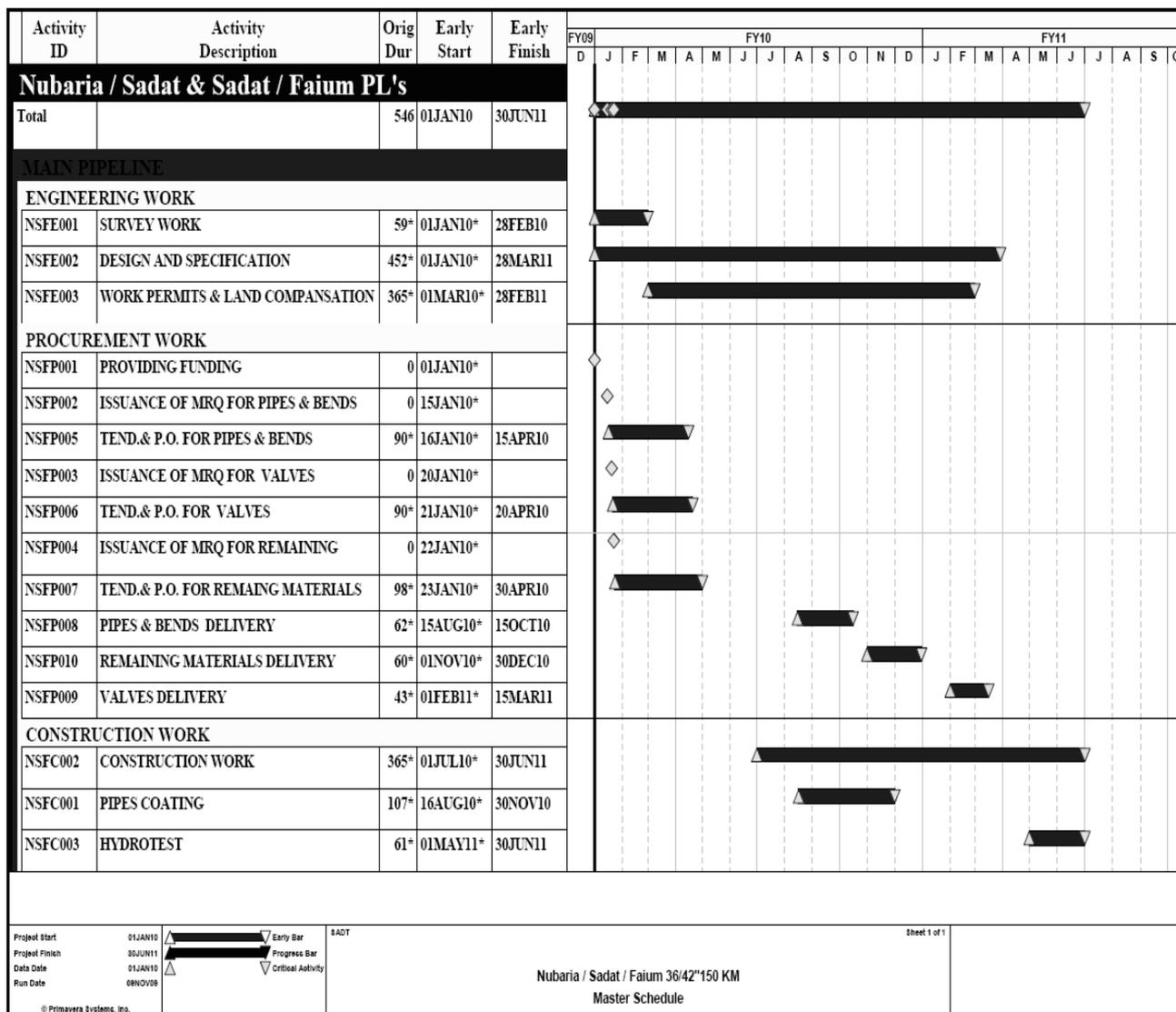
El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment

3 : project Description



3.4 TIME SCHEDULE FIG (2)



Generally, it is to be expected that working hours will be restricted to the daylight hours.



3.5 Types & number of equipments used during the construction phase:

Table (15) Types & number of equipments used during the construction phase

<u>S</u>	<u>Equipment</u>	<u>Each.</u>
<u>1</u>	<u>Double Cabin Car</u>	<u>8</u>
<u>2</u>	<u>Double Cabin Car 4*4</u>	<u>8</u>
<u>3</u>	<u>Pick Up</u>	<u>8</u>
<u>4</u>	<u>Bus (26 Persons)</u>	<u>21</u>
<u>5</u>	<u>Puller</u>	<u>4</u>
<u>6</u>	<u>Generator 200-250 K.V</u>	<u>5</u>
<u>7</u>	<u>Crane 50 Ton.</u>	<u>5</u>
<u>8</u>	<u>Side Boom D8</u>	<u>24</u>
<u>9</u>	<u>Pipe Welder</u>	<u>3</u>
<u>10</u>	<u>Pipe Carrier</u>	<u>2</u>
<u>11</u>	<u>Welding Machine</u>	<u>30</u>
<u>12</u>	<u>Low Bed</u>	<u>3</u>
<u>13</u>	<u>Water Tank Car</u>	<u>10</u>
<u>14</u>	<u>Solar Tank Car</u>	<u>3</u>
<u>15</u>	<u>Agriculture Excavator</u>	<u>14</u>
<u>16</u>	<u>Truck</u>	<u>2</u>
<u>17</u>	<u>Excavator</u>	<u>3</u>
<u>18</u>	<u>Loader</u>	<u>2</u>
<u>19</u>	<u>Bulldozer D8</u>	<u>1</u>
<u>20</u>	<u>Trailer</u>	<u>6</u>
<u>21</u>	<u>Compressor</u>	<u>5</u>
<u>22</u>	<u>Sand Plaster</u>	<u>5</u>
<u>23</u>	<u>Cement Mixer</u>	<u>3</u>
<u>24</u>	<u>Boom Excavator</u>	<u>4</u>
<u>25</u>	<u>Ambulance</u>	<u>1</u>
<u>26</u>	<u>Equipment carrier</u>	<u>1</u>



3.6. PIPELINE SURVEILLANCE - PATROLLING AND LEAKAGE

It is important that **GASCO** should take all reasonable precautions to safeguard its pipeline and people living in the vicinity of its pipelines.

This code has been written to cover two specific areas of Pipeline Surveillance.

- 1) Pipeline Patrolling
- 2) Leakage Survey

3.6.1. PIPELINE PATROLLING

Pipeline Patrolling is carried out in order to identify activities or actions that could damage the pipeline. It also identifies areas of concern such as land slippage etc. in the general area of the pipeline that could cause subsequent problems. The frequency of the patrol will vary for differing areas. In desert regions there is minimal work carried out around the pipeline. In Urban areas where there is a lot of excavation activity on water mains, sewers, etc. and the frequency of inspection needs to be highest.

3.6.2. LEAKAGE SURVEY

Leakage Survey is carried out to protect the population and staff against the effects of escaping gas and detect damage to the pipeline. It is therefore carried out where the pipeline runs close to buildings and where staff work.

This Code is supported by Two Report Sheets one for each day of the survey for Patrolling Duties and one for Leakage Survey duties. These two sheets are designed to be the only documentation the operative needs to carry in the performance of the task.

The locations for both the Pipeline Patrolling and frequency and leakage survey must be determined in advance by a Responsible Engineer and reviewed at least annually.

All pipeline routes should be classified fully according to ASME 31.8 within 6 months of implementation of this code by a Responsible Engineer. This should also include those areas where regular leakage surveys will be carried out.



It is essential to take all reasonable precautions to reduce the risk of pipelines being struck or damaged. The inspection and surveillance, applied to a particular section of a pipeline, should reflect the likelihood of such damage at that location and the type of frequency levels should be regularly reviewed at intervals not exceeding two years.

All staff undertaking the Patrol duties and the leakage surveys must be fully trained before carrying out these duties.

Where the two surveys coincide in terms of frequency they can be combined into a Patrol and Leakage survey.

The Pipeline Patrolmen will carry out vehicle and walking surveys along the pipeline route, at the following frequencies:

3.6.3. FREQUENCY OF PATROL

Table (16) - Frequency of Patrol

PIPELINE LOCATION		VEHICULAR	WALKING
Location Class	1	6 Months	No survey
Location Class	2	1 Month Vehicular accessible areas inc canal and river crossings	6 Months Arable land, AGIs, valve rooms, crossings, sleeves
Location Class	3		2 Weeks Survey all areas
Location Class	4		2 Weeks Survey all areas

The Patrol will observe and report findings to the Sector Office on a daily basis and where the safety of the pipeline is at risk, notification will be as soon as possible.

The Patrol will be issued with written authorization to instruct other people affecting and the safety of GASCO property, to stop their work or actions immediately.

The Patrolman will need to complete a written Daily Report. These will be logged again on a daily basis, in the Area Office. These Daily Reports will be audited on a random basis by the Patrol's Supervisor.



The Survey Diary, issued to each Patrolman, will be completed by the end of each day. The Survey Diary will contain all observations along the pipeline route for a particular day. This Diary will be used as a check by the Patrol Supervisor.

All necessary Permits or permission will be obtained from landowners, farmers, railways, etc. prior to starting work. The Patrol will ensure that he holds a valid Identity Card or Letter of Authorization.

In addition to watching and reporting on the PPC pipelines, the Patrol will establish a good liaison with farmers and landowners along the pipeline route.

It is not the intent to specifically test for the presence of leakage with gas detection equipment during this survey.

3.6.4 VALVE ROOMS

The following table illustrates the valve rooms proposed to be constructed and their specifications.

Table (17) - Specifications of Valve Rooms

Room no.	Room dimension (m)	KM point
1	138x60	0
2	25x45	16
3	25x45	32
4	25x45	55
5	50x100	70

3.7 Construction

Qualified and approved contractors under the supervisions and monitoring of GASCO personnel will carry out construction.

The work will broadly be split into the following phases:

- ◆ Pipe storage and stringing of pipe.
- ◆ Foundations structural work or civil work
- ◆ Trenching lowering and laying



- ◆ Backfilling
- ◆ Welding & welding inspection
- ◆ Tie in including valves
- ◆ Piping pneumatic test
- ◆ Piping cleaning
- ◆ Installation of permanent facilities (heaters, fractions towers, gas turbines.....)

Brief descriptions of the key activities contained in each phase are outlined below

3.7.1 Pipe, installations, storage & stringing

The project management selected the needed sites for storing the pipes and other installations in an area selected carefully for such purpose. The Contractor will pay great attention in adapting appropriate procedures (approved by GASCO) during transporting, handling, and stacking pipes and installations to ensure that no damage whatsoever results to the pipe or coating.

Storage Piping material must be stored by type, size and material specification. Materials will be supplied colour marked, to differentiate types/services of materials. Care must be taken to select and utilize special material such as that manufactured to NACE Std., ASME code and alloys for their required services only. Materials must be checked for their colour-coding

Note: for **Protection** of All piping materials, they will be stored outdoors shall be supported off the ground.

3.7.2 Foundations structural work or civil work

At this stage, the site is ready for the commencement of starting the construction of the plant structure. Through the construction of the various components of the plant structure a lot but similar activities take place which follow the pattern for the preparation for pouring concrete. The pattern is as follow:

- ◆ Concrete shuttering: which involves the use of shuttering materials mainly plywood for forming the required shape and size of the component being constructed.
- ◆ Reinforced steel preparation: which involves the sizing , cutting, and shaping of the reinforced steel bars to the required shapes and sizes, as well as the laying of these bars in the shuttering a specified in the structural design.
- ◆ Concrete pouring inside the formed shuttering (form work) so a to form the required skeleton of the structure. This is done through the use of a concrete batch plant which mix



the concrete components (cement, gravel , sand, and water) internally in batch amounts which is then transported to pouring site through the aid of concrete trans-mixers and poured through the use of concrete pumps and cranes.

- ◆ The installations of the concrete works subject to exposure with the surrounding ground water table.

Aggregates with different sizes and with an estimated sum total of 10,000 cubic meters for the use with different types of a concrete mixes to yield different required concrete strengths.

3.7.3 Trenching lowering and laying

A trench will be dug from the running track to allow the pipeline to be buried. The width of the trench will be the width of the pipe plus 0.4 m. Sub-soil from the trench will be stored in loose piles on the opposite side of the working width to prevent mixing with top soil. The minimum cover on top of the pipeline will be 1.5 metres. The bottom of the trench will be uniformly graded and covered with sieved sand to prevent any damage to the pipe coating. The pipeline trench will be a minimum of 2 m from any existing pipeline. The trench will be left open for as short a time as possible before the pipeline is lowered into the trench.

3.7.4 Backfilling

The pipeline will be lowered into the trench using wide, non-abrasive belts, and care will be exercised to avoid causing damage to the pipeline coating. In marshy areas, negative buoyancy will be created using a concrete coating. Warning tapes will be installed 30 cm below ground level.

The trench will then be backfilled with layers of the original stored sub-soil. Once in the trench is filled the reinstatement of the whole working width begins. This involves ripping the sub-soil to rectify any compaction that may have occurred during construction and grading to the original contours. Topsoil will then be replaced across the working width to its original depth, will be graded carefully, and clean up operations will need to be completed within one week of backfilling.

3.7.5 Welding and Weld Inspection

Welding Processes The following welding processes are acceptable:

Shielded Metal Arc Welding (SMAW)



« Gas Tungsten Arc Welding (GTAW)

Gas Metal Arc Welding (GMAW)

« Flux Cored Arc Welding (FCAW)

• Submerged Arc Welding (SAW)

(Automatic or Semi-automatic)

Welder Qualification All welding and tacking must be performed by welders who are currently qualified to applicable codes, and to specific variables and materials of the procedure. Welders and welding operators must be currently qualified as required by the applicable ANST/ASME Code.

Welding Procedure The procedure for welding must conform to the current applicable ASME Code. ASME Section IX forms QW-482 and QW-483 or their equivalent must be used.

Welding inspections

a) Non destructive tests:

- Radiographic test (R.T. 100%)
- Ultrasonic test (U.T. 10%)
- Die penetrate test for weld let, sweeplet and nipplet (½", 1")

b) Destructive tests (Mechanical Test), includes:

- Tensile test
- Bending test
- Macro etching test
- Impact test
- Nick break test
- Hardness test

Every 200-weld joint we made this test (0.5% of all welds) in the laboratory of the faculty of engineering.

3.7.6 Tie in including valves

Valves requiring frequent operation, and located more than 2 meters (6 feet - 9 inches) above the operating level, require extension stems



Valves should not be installed with stems below the horizontal position, unless otherwise approved by Client.

Impact type hand wheels or handles may be installed on extended stems if the stem is independently.

3.7.7 Pneumatic test

Test Media Utility air or nitrogen can be used. The air used for blowing and testing shall be clean, dry and oil free. All instrument air system shall be service tested with its own medium when this is not available, a utility air source supplied by a non-lubricated compressor may be used

Test Pressure and Duration Air piping receiving a pneumatic test shall be tested at service pressure. Piping receiving a pneumatic test shall be tested at 110 percent of the design pressure, or to the maximum upset pressure, whichever is the greater. The pneumatic test pressure shall be continuously maintained for minimum time of 10 minutes.

• TEST RECORDS

Records shall be made of each system tested, which shall include:

- Date of test.
- Identification of piping tested.
- Test medium.
- Test pressure
- Approval by the Inspector

3.7.8 Cleaning of pipes

- **MATERIALS** Cleaning solutions used shall be compatible with piping materials, valve trim, gaskets, and all other components in the piping. Chemical cleaning shall not exceed 0.2 mils metal penetration. Solutions and water used for detergent flushing of stainless steel piping shall not exceed 50-PPM chloride content.
- **ACCEPTANCE** The cleaning contractor shall make a record of all lines cleaned. For carbon, steel piping the record shall include the degreasing, pickling, and end of cleaning examinations and type of passivator used. For stainless steel, piping the record shall include the degreasing and end of cleaning examinations.
- **DRYING** The cleaning contractor shall drain and dry the cleaned piping. Carbon steel



shall be dried to -40 degree F dew point Stainless steel shall be blown out with dry air.

RUST PREVENTION The cleaning contractor shall apply a rust preventative on the internal surface of cleaned carbon steel piping immediately after drying. Lube oil and seal oil piping shall be coated with a rust preventative approved by the equipment manufacturer

3.7.9 DISPOSAL OF CHEMICALS

All chemical streams, rinses and drains shall be contained or shall be collected in suitable vats or tanks. No streams shall be allowed to drain upon the ground. Approval must be obtained prior to start draining any material to an existing sewer system.

3.7.10. WATER BODIES CROSSING METHODOLOGY

Crossing of Water bodies and main canals in this project shall not be done by the traditional open-cut method. It shall be done using a new technology named Horizontal Directional Drilling.

Horizontal Directional Drilling (HDD) is a trenchless methodology that provides an installation alternative that can offer a number of benefits over traditional open-cut. HDD can be implemented with very little disruption to surface activities, requires less working space, and may be performed more quickly than open-cut methods. Also, it can simplify or eliminate certain permitting processes. This type of installation which was applied in municipal underground infrastructure systems and petroleum products pipelines has seen a dramatic increase in recent years. Although there are currently no national standards regarding HDD installations for any pipe material, HDD pipeline installations are becoming more and more common and may be the fastest growing trenchless construction method today. They can be used to install new pipelines or replace existing ones.

The technique stages are illustrated in Fig. (3.1), which shows the operation in three stages, as follows:

Stage 1

The drilling rig and its associated equipment is set up and positioned on one side of the crossing. The carriage framework is inclined to the desired entry angle, which can be between 5° and 30°. Typically the entry angle is set between 10° and 14° to the

horizontal.

An 80mm dia. Pilot hole is drilled using either a mud motor or a jet bit, attached to 73mm dia. Pilot drill pipe. The steering mechanism is provided by means of a small bend or bent sub, usually less than 1° and situated behind the drill. Changes in direction are

achieved by partial rotations of the bent sub, as the pilot string proceeds forward. Figure (3.1) gives a detail of the downhole drilling assemblies with mud motor and jet bit.

The progress of the pilot hole is monitored by a directional survey steering tool package. A survey probe is positioned just behind the drill head, which is linked by a hard wire up the center of the drill pipe to a computer and printer located in the control cab. The probe contains fluxgates and transducers which measure data in a three-dimensional plan by vector measurement, enabling the course of the pilot hole to be plotted joint by joint. Continuous read outs give the following information:

- (a) Inclination relative to the vertical plane.
- (b) Direction of hole relative to magnetic north, and.
- (c) The orientation of the steering mechanism or bent sub relative to the high side of the hole.

The drilled distance is measured at the drilling rig by physically monitoring the down hole pipe lengths.

The readily available survey information, combined with the ability to steer and drill, allow the pilot hole to be drilled along the planned profile.

Progress or drilling speed depends on the suitability of the drilling medium.

As the pilot hole progresses the frictional force gradually increases on the 73mm dia. Pilot string and it then becomes necessary to wash-over the pilot string with 127mm dia. Washpipe. The front of the washpipe is fitted with a cutting bit, typically 300mm dia. And fitted with round 20 kennametal cutting teeth. Unlike the pilot string, the entire



wash pipe rotates in moving forward.

In addition to reducing frictional forces the wash-over pipe increases the diameter of the drilled hole. It also serves to smoothen the curve and to eliminate any irregularities which may have occurred by use of the steering mechanism.

Stage 2

Drilling progresses with alternate drilling of pilot drill pipe followed by wash-pipe. The distance between the wash-over pipe cutting bit and the pilot drill bit will be in the range of 25.0 m to 80.0 m. It is not advisable to have wash-over pipe closer than 25.0 m as the proximity may adversely affect the accuracy of the survey tool. Alternate drilling continues until both the pilot string and wash-over pipe exit in the target area.

The pilot string is now removed from the system by pulling back to the drill rig, leaving the wash pipe in place as a drawstring for the pre-ream operation.

For the pre-ream operation a barrel reamer, fitted with jets and cutting teeth, is attached to the end of the wash pipe. The diameter of the pipe to be installed dictates the diameter of the barrel reamer. Typically the diameter of the chosen reamer will be twice the diameter of the pipe to be installed. The barrel reamer is rotated along the drilled path enlarging the formed annulus.

As the reamer is pulled back, additional lengths of 127mm drill pipe are added on behind, to ensure that a complete drill string remains in the hole for the next **operation.**

Stage 3

Either before or during the drilling operation, the pipeline has been fabricated on the target side of the crossing. On completion of hydrostatic testing, the pipeline fabrication is raised onto conveyors. A pulling head is welded onto the front end of the fabrication. The reamer is then transported to the target area, i.e. the opposite side of the crossing. On completion of the pre-ream operation, the reamer is disconnected. The assembly for the pipeline insertion consists of the barrel reamer, followed by a universal joint, and a

swivel to prevent rotation of the pipeline being installed. The reamer and pull head assembly are rotated and pulled back from the drill rig using the wash-over pipe. Accordingly a further reaming of the hole takes place as the pipeline is being inserted into the reamed hole.

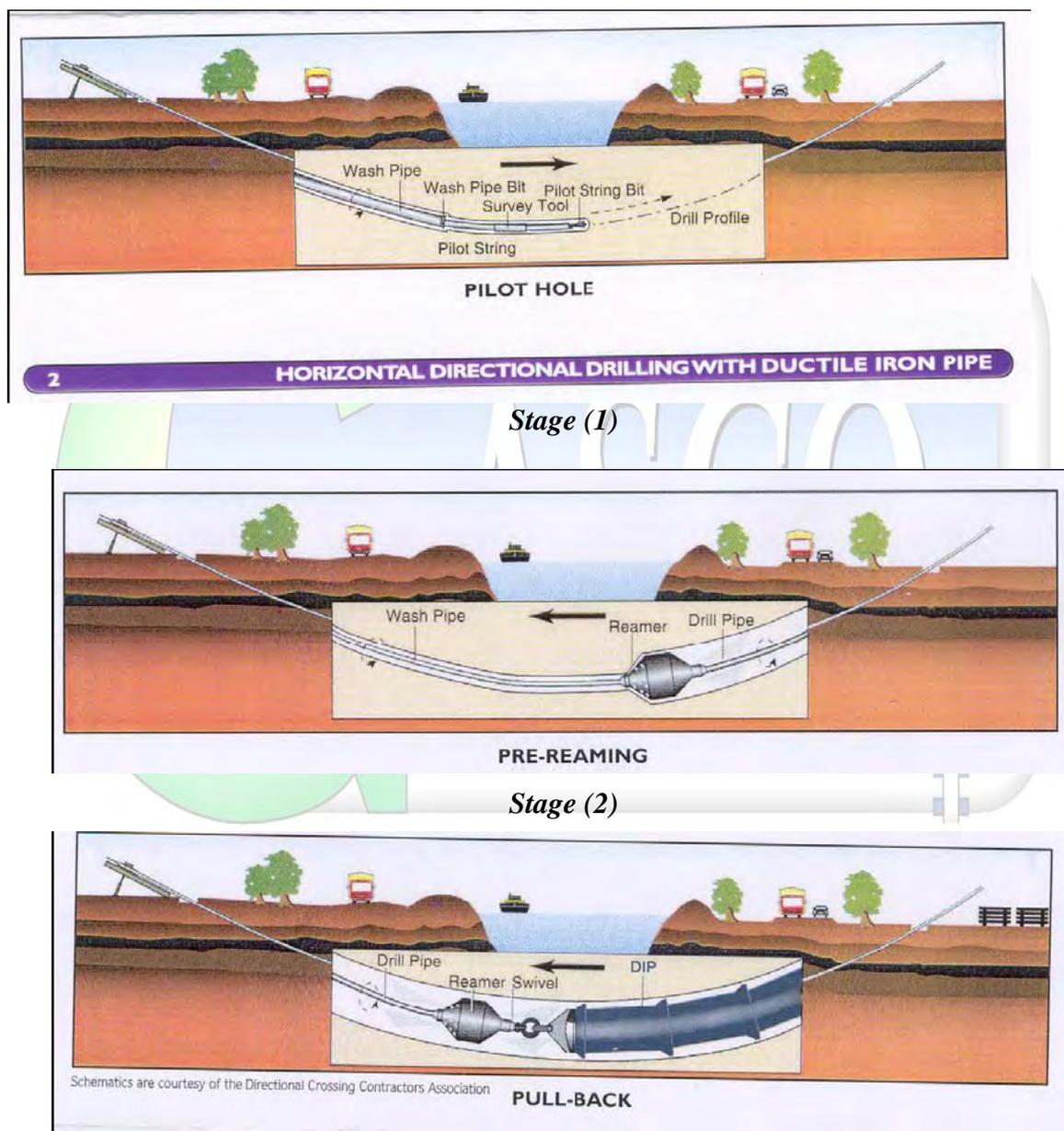


Figure (3) Stages of the Horizontal Directional Drilling Technique (HDD)



3.7.11. HYDROSTATIC TESTING

Water shall be clean fresh water and free from any substance, which may be harmful to pipe material.

- Fitter of sufficient capacity to accommodate the filling capacity of the pumps shall be installed between the water source and the suction flange of the pump and shall be kept in good order all the time of the operations (mesh 20). The lines will maintain static pressure for 24 hours with no unexplainable drop in pressure for test to be acceptable.
- A pressure-recording instrument shall be connected to the pipeline for the duration of the test.
- Hydrostatic testing must be followed by dewatering and gauging, the pipeline must not be left water in it.
- The pipeline will be tested in two sections; the water used in the first section will be tested to show the possibility of using it in the second section.
- There is no need to use corrosion inhibitors.
- The steps of the hydrostatic test are as following:
 - A 'by direction' is placed in the beginning of the pipeline before water flushing.
 - The pipeline is filled with fresh clean water by use of pumps. Filters are placed between the pumps and the pipeline to remove any contaminants to enter to the pipeline.
 - The by direction is moving in the entering water inside the pipeline to guarantee the emptiness of the pipeline from air.
 - The by direction comes out from the receiver trap.
 - Assure that there are no 'air pockets' inside the valve rooms.
 - The pressure is raised inside the pipeline till reaching 50% of the required pressure for the test; for example: if the required pressure is 105 bar, then the pressure is raised to 52.5 bar.
 - The pressure is stopped for 12 hours. Patrolling on the pipeline and the valve rooms to ensure the absence of any leakage.
 - After 12 hours, the pressure is raised again till reaching to 105 bar.
 - The pressure is for 24 hours observed and recorded on a chart recorded.



- After checking and being sure that the pressure is stable for 24 hours, the pressure is lowered to 0 bars.
- The receiver trap is opened again and the 'by direction' is placed for sweeping the water.
- There is no need for using corrosion inhibitor in the hydrostatic test for the following reasons:
 - The water used in the test is clean freshwater ($NaCl=3\%$) not sea water.
 - The pipes are internally coated with anti-corrosion substances that don't be affected by the pigging.
 - The test duration is short; 24 hours, then the pipelines is emptied of the water after.

• the source of hydrostatic test water will be from the Nubaria power station where the main source of water to Nubaria power station is from Nubaria conduit which is about 500 meter from the power station, the amount of water needed is about 11.000 meter cube and the discharge of this water after finish the test will be again into the nubaria conduit but not before tested for any harmful or dangerous chemicals and the discharge of the water will be in form of dosage in order not to make any effect on the marine life.

3.7.12 DEWATERING

- Dewatering will follow immediately upon completion of a satisfactory hydrostatic test the pipeline must not be left with water in it.
- As a minimum this procedure will be based upon the use of foam bodied pigs or rubber cupped bi-direction pigs.
- Pigs will be run until there is no evidence of water in the pipeline as determined by the company.
- Test for water shall include assessment of the gain in weight of any foam pig or measuring of the dew point of the compressed air into and out of the pipe line.
- Measurement will take place before dewatering to complete arrangement with the responsible authorities.
- Dewatering will continue until the company's engineer is satisfied that pipeline is free from water within acceptance limit.

3.7.13 MAGNETIC CLEANING AND GEOMETRIC PIGGING



- A series of magnetic cleaning pigs will be run until the pipeline is judged by the company to be free of magnetic debris.
- After the pipeline has been cleaned by the magnetic cleaning pig the contractor will run a geometric pig. Acceptance of the pipeline will be based upon a successful report by this pig.
- Following a successful run by the geometric pig the pipeline will be left with positive pressure in it of at least 2 bar. The medium be with either dry air or dry nitrogen as determined by the company.
- The discharge will be some metallic components and will be disposed to industrial dump.

3.7.14. DRYING AND COMMISSIONING

The pipeline will be dried by the application of either vacuum drying or by flashing with dry nitrogen at ambient temperature to ensure that no operational problems arise from water left in the pipeline

3.7.15. RECORDS & OPERATING MANUALS

The constructing contractor will be responsible for the production of all kinds of records relating to the whole construction job. These records include but not limited to:

- (One) **Materials records** that contain identification number, inspection certificates, test certificates, etc.
- (Two) **Welding records** (e.g. welder qualifications, welding procedure, etc.).
- (Three) **Protective coating records** that contain date, method of cleaning, material used, repairs, etc.
- (Four) **Painting records** (e.g. paint type, grade of paint, paint batch number, etc.)
- (Five) **Mechanical installation records** (e.g. testing procedure, insulation procedure, pipe alignment, etc.)
- (Six) **Structural steel work records** (e.g. line, level, plumbness, tightness of bolts, etc.)

In addition, Contractor shall supply all necessary maintenances manuals and training in their application.

3.7.16. FOR CORROSION CONTROL

The buried metallic structures (pipelines, valves) are coated and cathodically protected according to BS, 739, part 1 as all gas networks.

4-Existing Environment

4-pipe line route description

The pipeline starts from the valve room in front of EL NOUBARIA power station (this room is the end of ABO HOMOS EL NOUBARIA pipeline) with 69 Km length and 36" diameter, then it extends to the east parallel to the north wall of EL NOUBARIA power station, then it turns to the west parallel to asphaltic road in front of Othman Ibn Afan village, El Fattah village and Abu Baker El Sadiék village until it reaches El Maged village, then turns west in front of the power station and extends about 7 Km parallel to the asphaltic road, then turns south parallel to Wadi El Natroun road until crossing with Cairo-Alex desert road and extends parallel to SUMID pipelines in the eastern south direction this area was prepared before for oil and gas pipelines so there are no natural protectorates nor obstructions only some private farms of low population are found , the pipeline will cross some subsidiary roads of low traffic density one of them leads to EL Anba Makkar monastery, after that the pipeline extends until it reaches the off take of El Sadat city on Dahshour El Ameria pipeline .

4.1-Seismicity

Egypt is considered one of few regions of the world where evidence of historical earthquake activity has been documented during the past 4,800 years. Information on historical earthquakes is documented in the annals of ancient Egyptian history and Arabic literature. According to Sieberg (1932), Ambraseys (1961), Maamoun (1970), Ibrahim and Marzouk (1984), Poirier & Taher (1980) and Savage (1984), about 83 events were reported to have occurred in and around Egypt and to have caused damage of variable degrees in different localities. The earthquake occurred in Egypt on 1995, felt strongly in port Said. It has a magnitude of about 5.2. Its epicenter was at Nuweiba. It resulted in the damage of Nuweiba docks, however, it did not cause damage in the eastern Delta regain. Kebeasy (1990) suggested that the level of earthquake activity in Egypt is generally low. Abdel Kader (1982) Stated that northern Egypt has been inactive, except for minor

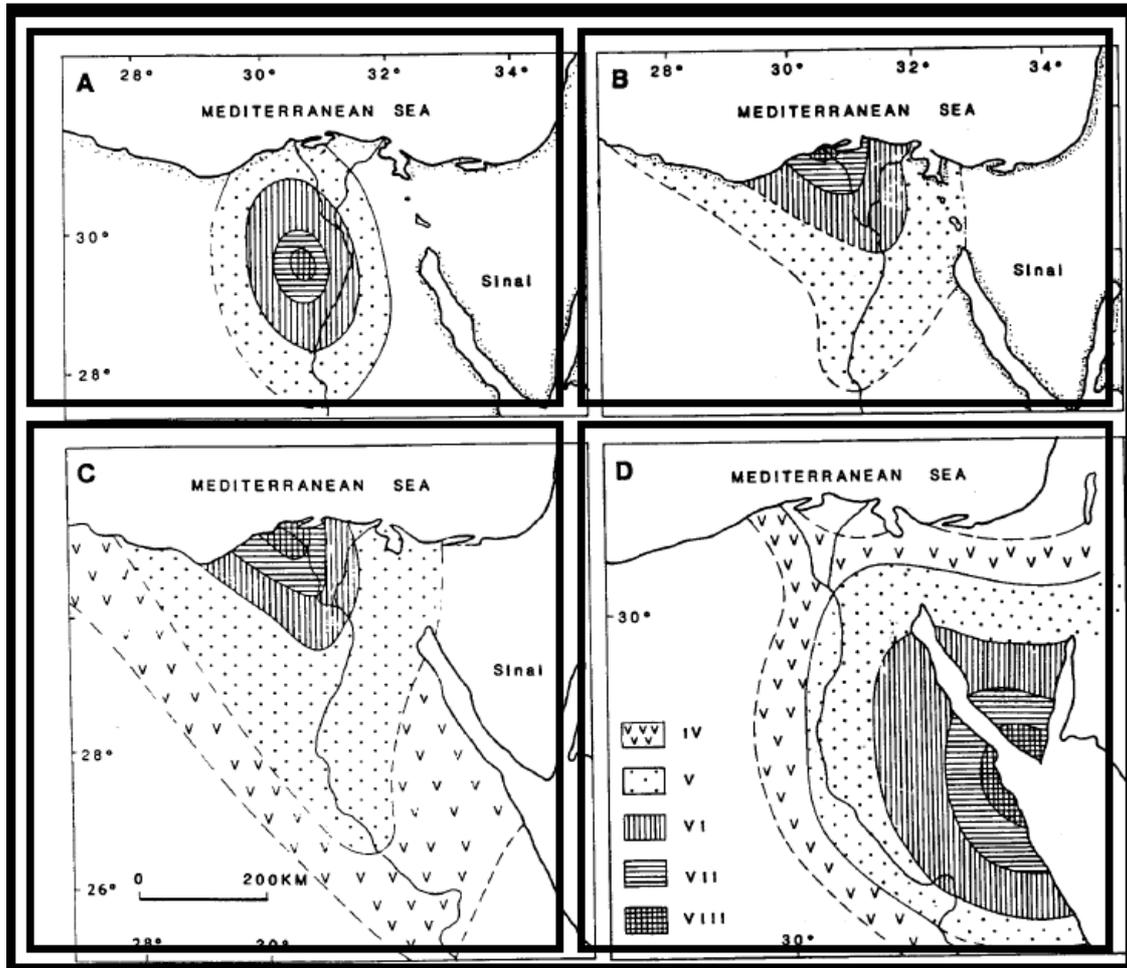
4-Existing Environment

trenons and earthquakes since Oligocene and early Miocene times. No major tectonic environments seem have occurred since the early Miocene (Said 1962, 1981). Distribution of earthquake epicenters in Egypt suggests three major seismic active tones, which extend along the following trends.

- Northern Red Sea - Gulf of Suez - Alexandria
- The Levant - Aqaba
- East Meditteranean (Pallusiatic) – Fayum

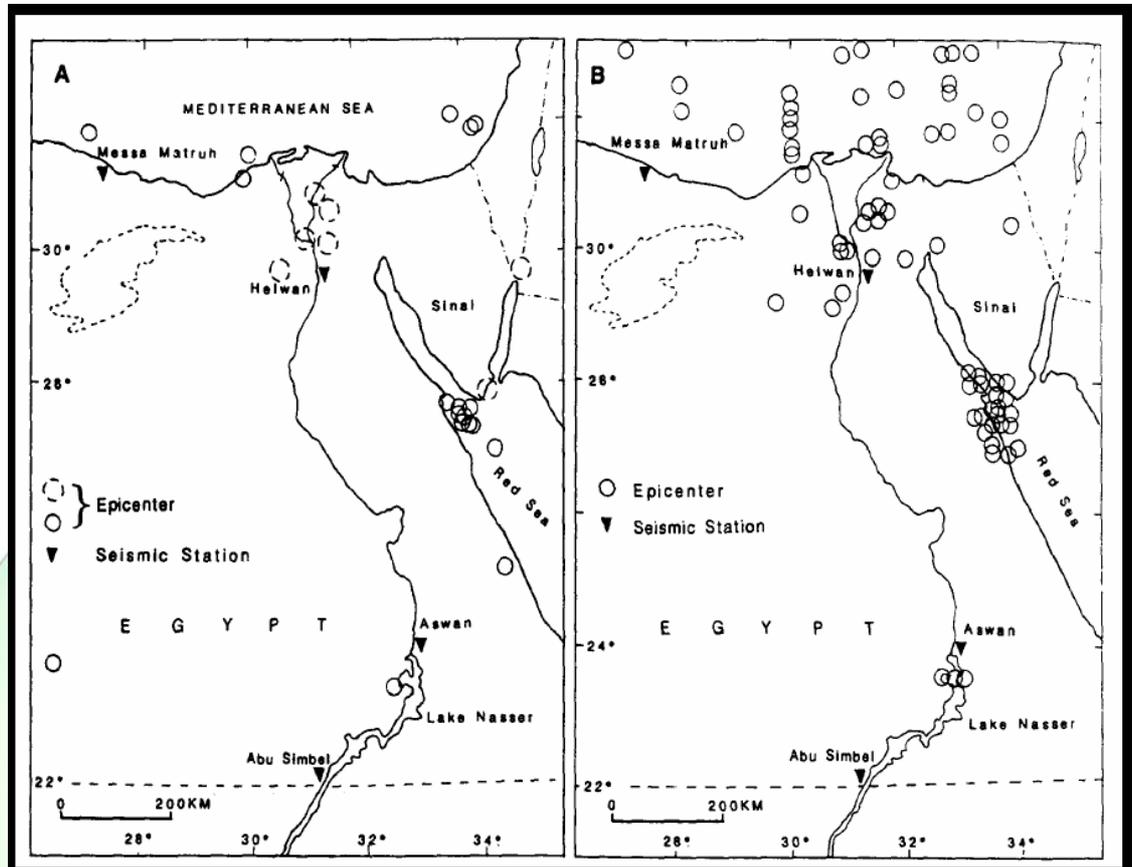
Occurrence of an earthquake may represent a potential risk. Thus, precautions will be taken, mainly raising the awareness of the working staff in the field, in case of occurring an earthquake. Any way, and as described before, Egypt is not an earthquake active zone, so the threat of occurrence of an earthquake, although it is difficult to be predicted, is minor.

4-Existing Environment



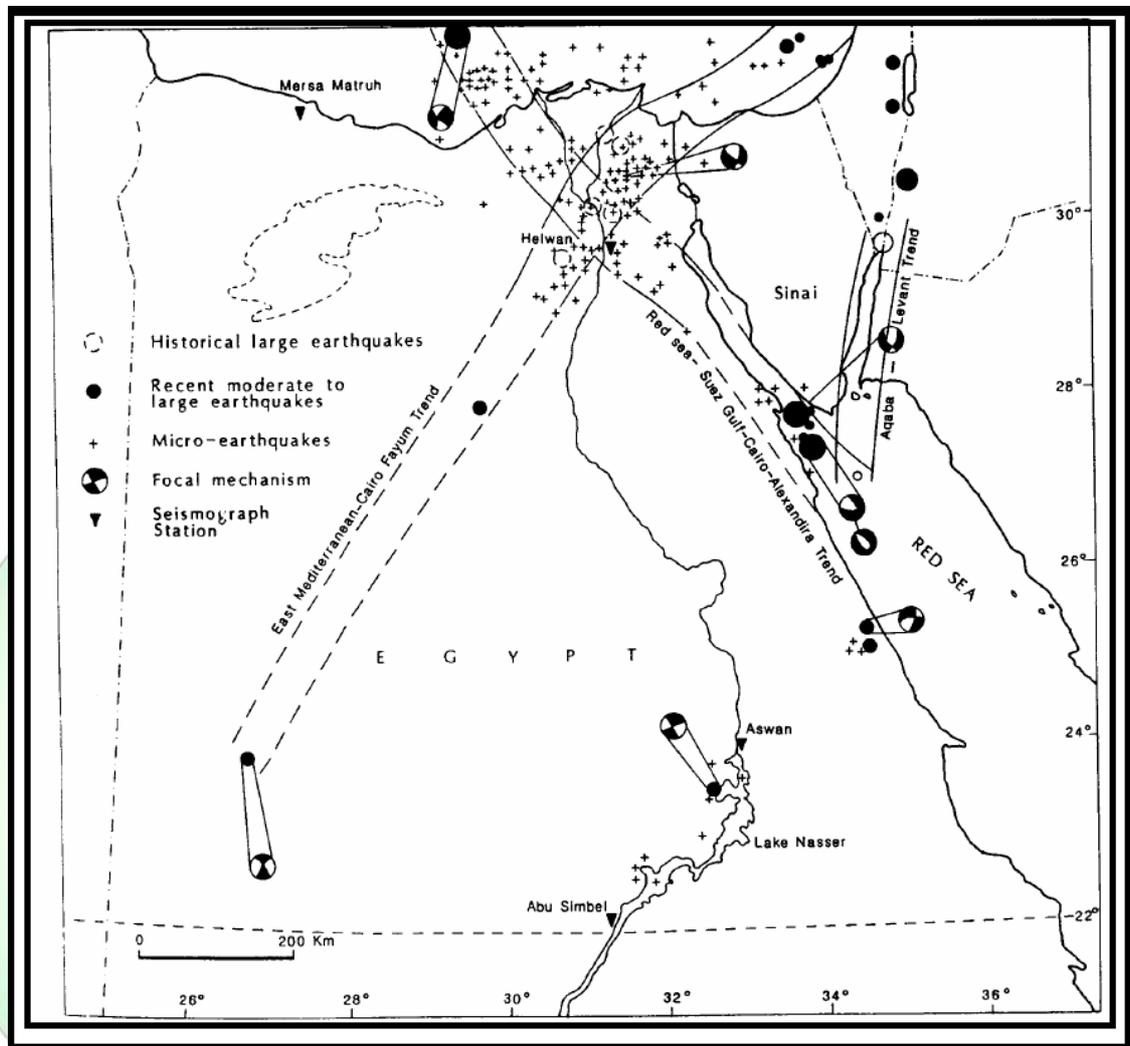
Intensity distribution of earthquakes of: A. August 1847; B. 24 June 1870; C. 12 September 1955 and D. 31 March
IV-VIII = Earthquake intensity. FIG (4)

4-Existing Environment



A location of permanent seismic stations and epicenters of historical and recent medium to large earthquakes; B. epicenters of small earthquakes. FIG (5)

4-Existing Environment



Epicentral distribution of all earthquakes, focal mechanisms of principal earthquakes and active seismic trends.
FIG (6)

4.2-the ground water system in the study area

The Quaternary water-bearing sands and gravels represent the main groundwater aquifer in Egypt. The aquifer has semi-confined condition at its central part, however, it is present in free condition at its eastern and western boundaries. The groundwater level decreases gently northwards.

4-Existing Environment

The groundwater flows generally toward the north. Other local trends are found either from or toward the River Nile. Adjacent to the new reclaimed areas on both sides of the Nile Valley, the groundwater flows toward the old cultivated lands if the irrigation depends on the areas if the irrigation depends on the groundwater only.

4.3-ECOLOGICAL HABITAT

The vegetation of Egypt is confined largely to the Nile Delta, the Nile Valley, and the oases. The most widespread of the few indigenous trees is the date palm. Others include the sycamore, tamarisk, acacia, and carob. Trees that have been introduced from other lands include the cypress, elm, eucalyptus, mimosa, and myrtle, as well as various types of fruit trees.

The vegetation in the western desert is dependent on precipitation and ground water. Precipitation includes direct effects of rain, as well as run-off and transient storage of water bodies in soil or subsoil. The drier the climate is the more important the run-off conditions are because they enable the soil to protect buried resources. These include sand cover, geomorphology, and water character capacities. Here, relatively long-lasting water bodies can develop which support at least some woody plants such as:

acacia sp

tamari sp

maerua sp

capparis sp

The alluvial soils of Egypt, especially in the delta, sustain a broad variety of plant life, including grapes, many kinds of vegetables, and flowers such as the lotus, jasmine, and rose. In the arid regions alfa grass and several species of thorn are common. Papyrus,

4-Existing Environment

once prevalent along the banks of the Nile, is now limited to the extreme south of the country.

Because of its arid climate, Egypt has few indigenous wild animals. Gazelles are found in the deserts, and the desert fox, hyena, jackal, wild ass, boar, and jerboa inhabit various areas, mainly the delta and the mountains along the Red Sea. Among the reptiles of Egypt are lizards and several kinds of poisonous snakes, including the asp and the horned viper. The crocodile and hippopotamus, common in the lower Nile and the Nile Delta in antiquity, are now largely restricted to the upper Nile.

Birdlife is abundant, especially in the Nile Delta and Nile Valley. The country has 153 known species of birds, including the sunbird, golden oriole, egret, hoopoe, plover, pelican, flamingo, heron, stork, quail, and snipe. Birds of prey found in Egypt include eagles, falcons, vultures, owls, kites, and hawks.

Many species of insects live in Egypt. Beetles, mosquitoes, flies, and fleas are especially numerous; the ichneumon, a parasitic insect, occurs in various areas, especially the delta. Scorpions are found in desert areas. Some 70 species of fish live in the Nile and in the deltaic lakes.

4.4-FLORA

The natural vegetation of the Nile valley forms a semi-occasional corridor in the midst of the Eastern Sahara; rainfall is irregular and nearly nonexistent, and no permanent tributary to the river Nile flows within Egypt's boundaries. Thus, the vegetation is entirely dependent on the Nile water,

4-Existing Environment

Vegetation composition is therefore linked to water, temperature, species' growth habit and ability to withstand flooding several months a year. Some of the desert plants were observed during investigation at

Beta vulgaris, Cynodon dactylon, Corchorus olitorius, Rumex dentatus, Brassica nigra, Melilotus indica, Convolvulus arvensis.

4.5-FAUNA

The main habitats which the proposed pipeline route traverses support a diversity of fauna, many of which are widespread and highly mobile and because of this mobility and widespread distribution the impact will be minimized as the ability of restoration is high. During this survey no much wild life specially mammals has been observed,

Few migratory species has been observed during the field survey most of them were birds of prey and insect eating birds (insectivorous) where the newly reclaimed areas considered a good resting sites and use the adjacent agricultural areas as a foraging site with plenty of small preys in case of the birds of prey and insects in case of insectivorous species. According to literatures some other species passes during their migration from and to north like greater spotted eagle (*Aquila clanga*), imperial eagle (*Aquila heliaca*) and lesser kestrel (*Falco naumanni*) which is protected by law.

Also domesticated animals were observed during the survey (, Buffaloes, Cows, donkeys, Sheep, Goats, dogs), In fact the presence of these animals is depending on the human activity where it is found normally in agricultural and reclaimed areas. All of these animals were sheltered and fed by their owners either in open or covered pens, and no free grazing animals were observed due to lack of natural grazes because of extreme aridity in desert part of the proposed pipeline route.

4-Existing Environment

4.6-ARCHEOLOGY

The roots of Egyptian civilization go back more than 6,000 years to the beginning of settled life along the banks of the Nile River. The country has an unusual geographical and cultural unity that has given the Egyptian people a strong sense of identity and a pride in their heritage as descendants of humankind's earliest civilized community.

There are nearly no locations of archaeological sites along the proposed route of the gas pipeline has been produced.

Climate

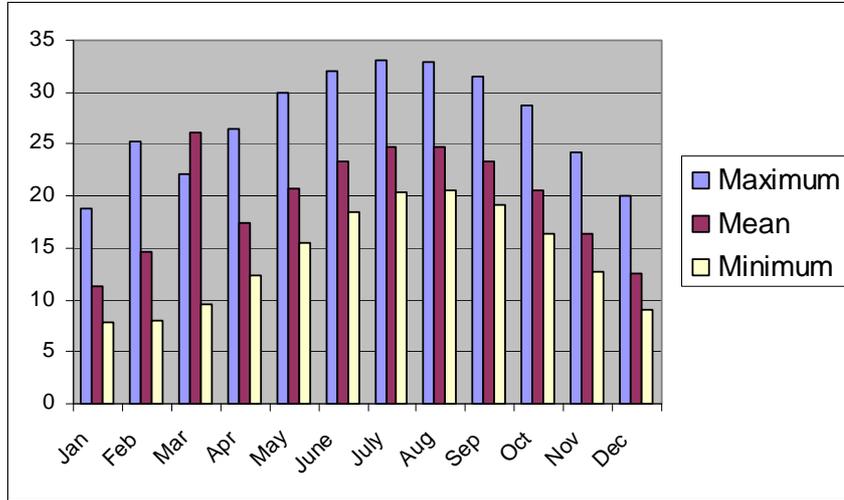
4.7-AIR TEMPERATURE

Based on 30 years measurements, next table represent the average air temperature indicatives of the study area. It is quite apparent that the high temperature values are reached during May – August and the lowest ones during winter period (January - February). Table (18)

Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Maximum	18.8	25.2	22.2	26.5	29.9	32.1	33.1	32.9	31.6	28.8	24.2	20.1
Mean	11.3	14.6	26.2	17.45	20.7	23.3	24.75	24.75	23.35	20.6	16.45	12.6
Minimum	7.8	8	9.5	12.4	15.5	18.5	20.4	20.6	19.1	16.4	12.7	9.1

Maximum, Minimum and Average Air temperature

4-Existing Environment



Figure(7)

4.8-rain and relative humidity

In the area of study the rian fall is considered of average rate ,where max rain fall happened in winter (January 14.1mm) and the lowest rate in summer where it nearly zero.

Table(19)

Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
precipitation mm	14.1	11.3	6.1	2	1	0	0	0	0.05	2.6	9	12.2
Relative Humidity %	69	66	66	61	61	63	67	67	67	69	70	71

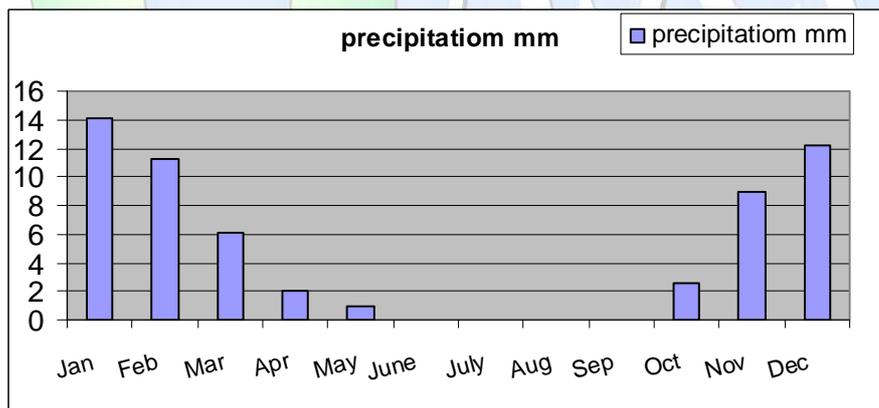


Figure (8) shows the amount of rain fall in the study area

4-Existing Environment

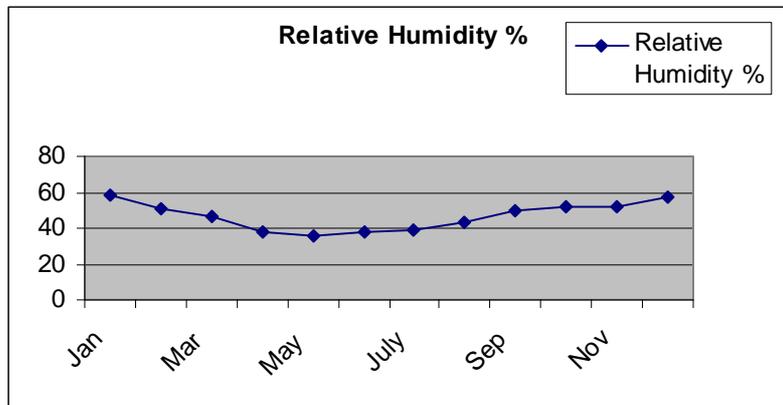


Figure (9) shows the amount of humidity in the study area

4.9-WIND

The following table and figures show that, the wind blow from Northern directions and north west directions are the prevailing winds. There are winds coming from the Southern directions especially during March to april. Though the wind speed is highly variable, at study area, but the wind blows mainly from Northern Areas. Table(20)

Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Calm	35	30.5	29.7	26.8	28.8	28.7	29.8	34	39	40.2	41.1	37.3
N	4.1	5.5	7.9	10.7	13.1	11.9	9.9	12.8	15.8	14.3	11.2	4.6
NNE	4.2	4.9	7.8	8.9	7.7	4.8	2.2	2.7	5.5	7.1	8.1	4.8
ENE	2.7	3.5	5.4	6.6	5.4	1.9	0.3	0.5	2.1	2.9	2.8	2.8
E	2	2.8	4	4.9	3.4	1.1	0.1	0.2	0.7	1.3	1.2	1.8
ESE	1.4	1.9	1.8	2.2	1.6	0.5	0	0.1	0.3	0.6	0.6	1.1
SSE	1.8	2.4	2.3	2	1.5	0.3	0.1	0	0.4	0.7	0.8	1.6
S	2.2	2.5	1.8	1.5	0.7	0.2	0.1	0.1	0.3	0.6	1.1	2.2
SSW	4.1	3	1.7	1.3	0.5	0.2	0.1	0.1	0.2	0.6	1.9	3.7
WSW	14.8	12.6	7	3.9	1.8	1.2	1.2	1.2	1	2.5	6.6	14.2
W	14.7	14.1	11	7.7	5.6	6.6	7.9	6.9	4.2	5.2	8.2	14
WNW	6.4	7.5	8.9	9	9.5	15.1	17.2	13	7.8	6.2	5.2	5.8
NNW	6.4	8.7	10.9	14.3	20.4	27.4	31	28.3	22.8	17.4	11.3	6.2

El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



4-Existing Environment

N: North
ENE: East North East
ESE: East South East.
S: South.
WSW: West South West.
WNW: West North West.

NNE: North North East
E: East
SSE: South South East
SSW: South South West.
W: West.
NNW: North North West

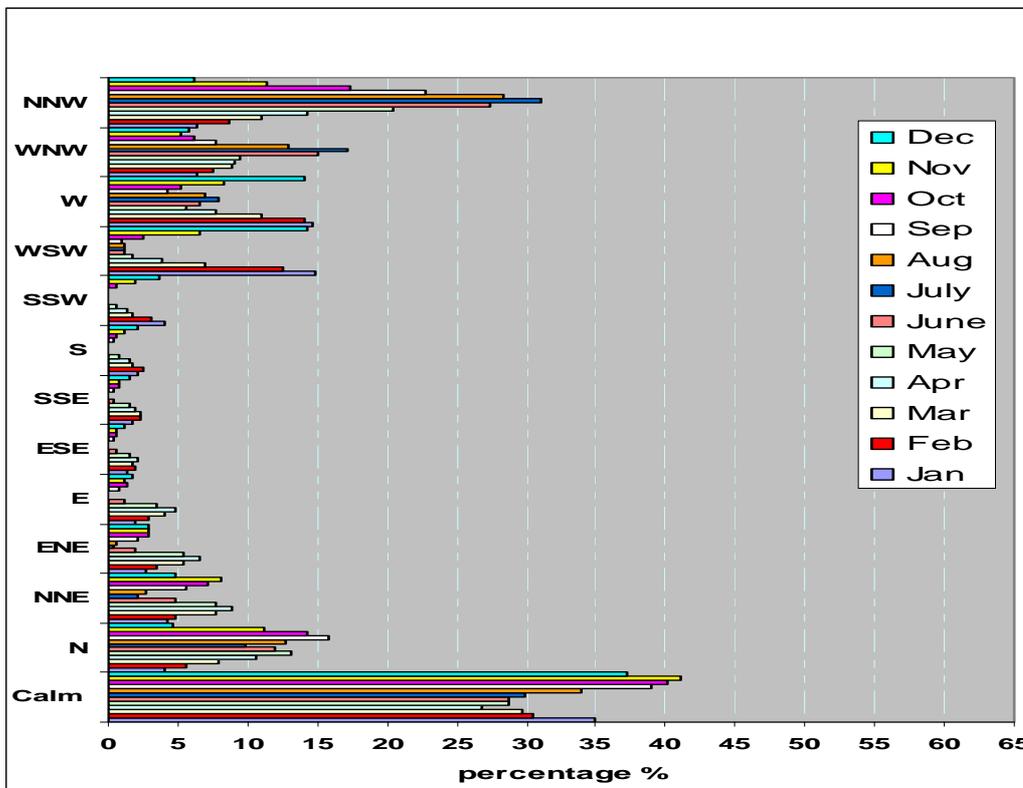
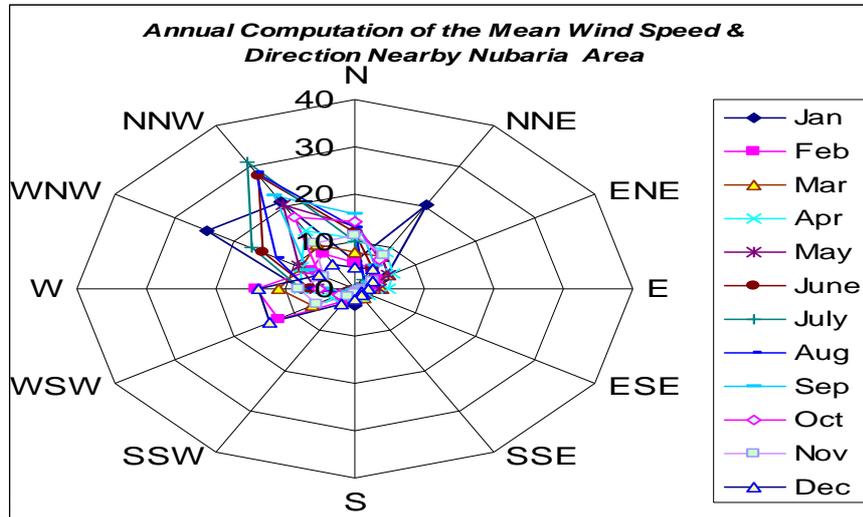


Figure (10)

4-Existing Environment



Figure(11)

4.10-SOCIO-ECONOMIC

Sadaat city is a major city which has been taken from the land of **El Beheira Governorate** to be annexed to El Menoufeya Governorate to decrease the density of population of people in that governorate. It locates on the driveway linking between **Alexandria** and Cairo and the industrial area in the city is placed in the eastern side away from the residential area to decrease the effect of pollution on the people. The major economic resources for the city are agriculture and some industries of chemical products, ceramics, and plastic objects making it an attraction for local and international investment to create an urban centre .

Located in the northwest of Cairo at 93km OF Cairo \Alex desert Road with a total area of square 500km with total urban area of square 18km divided on 12 residential area populated by 70 thousand people with 5 industrial areas covering 5 million square meters . The area is surrounded by a green belt with a total area of 30 thousand fedans .The world health organization (WHO) has chosen it among the top ten industrial society in the middle east for its environment and natural resources .

Industrial investment

4-Existing Environment

The industrial investments are the main nerve of development in the city of sadat the annual gross product exceeded billion in .the city was so designed in southern eastern side of the area to protect the residential area from the fumes and noise resulting from the industrial activity

Industrial sectors .

The city attracted more and more investments in the heavy ,middle and light industries in addition to workshops and small industries .the industrial area which covers 10.13 square km and compromises 5 industrial areas having about 131 factories for textile ,plastic ,ceramic ,chemicals and other engineering and mechanical industries whose production is exported .

Agricultural investment and food security

The general layout of the city has 30 thousand fedans constituting a green belt surrounding the city distinguishing it from other cities in the desert . 20 thousand fedans were reclaimed and cultivated with vegetables and fruit . The city also has centre for agricultural research and desert development .

Expansion of the industrial lands

The minister of population ,utilities and urban communities laid the foundation stone for adding 5 million square meters on the regional road to cope with the requirements of investments in the city .infrastructure works were over for the implementation and operation of drainage networks in addition to paving the roads networks besides supplying electricity and water necessary for 2.5 million square meters .allocating parcels for the investors started . the competent authorities agreed to the establishment of a new industrial area .

Location

- To the south of the city lies the city of October –six of October city
- To the west lies the governorate of Al-Behaira –city of wadi al-Natroun on Cairo\Alex Road
- To the north of the city lies the governorate of Al-Behaira- badr city
- To the east lies the governorate of Menofia – monof and ashmoun

El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



4-Existing Environment

Education in Sadat City

There is enough number of primary ,preparatory and secondary schools for the population . there is also a branch of Menofia university which will be an independent educational entity in 2008\2009 .The city also has a branch of the American university in Cairo .

Population:

Number of population in each city.

Sadat city: 22252

Khatatba:28443

Kafr Dawoud :47785

El Noubaria city consists of two habitation areas, the first one is called the 960 habitation units and the second one is called the thousand habitation units which contains three main large mosques

Area	1230 Km ²
Population at 2001	1000
Illiteracy ratio – above 15 years old	39%

5-Alternatives

As passed in the “Guidelines for the Egyptian Environmental Impact Assessment” issued by EEAA and the Guide line of EIB , the concept of alternatives to a proposed project extends to setting, design, fuels, raw materials ,technology selection, construction techniques, phasing , operating and maintenance procedures. The “no action” alternative –not constructing the project- is also considered in order to demonstrate environmental conditions without it.

For the concerned project activities, we can talk about the method that shall be used in crossing the water ways, roads and railways; which is the horizontal directional drilling. An alternative that one may talk about also is the “no action” alternative.

5.1 HORIZONTAL DIRECTIONAL DRILLING (HDD)

HDD is a trenchless construction technique, which uses guided drilling for creating an arc profile. This technique is used for long distances such as under rivers, lagoons, or highly urbanized areas. The process involves three main stages: drilling of a pilot hole, pilot hole enlargement, and pullback installation of the carrier pipe.

HDD offers several advantages when compared to other trench-less or open-cut construction methods:

- Complicated crossings can be quickly and economically accomplished with a great degree of accuracy since it is possible to monitor and control the drilling operation.
- Sufficient depth can be accomplished to avoid other utilities such as power and telephone cables.
- In river crossing applications, danger of river bed erosion and possible damage from river traffic is eliminated.
- Requires only a small construction footprint.

5-Alternatives

5.2 THE "NO ACTION" ALTERNATIVE

This alternative expresses the environmental gain if not implementing the proposed project construction activities compared with the project existence.

In order to effectively protect the current environment of the location, it would be better that no activities might be carried out. But when evaluating the concerned process that would be used, it can be concluded that no **severe change** would take place in the time or after implementing the project activities.

Thus, implementing pipeline project is recommended as long as their impacts are identified, analyzed and the mitigation measures of them are determined and executed.

A simple analysis for the three alternatives; the HDD technique, the traditional 'open cut' method and the "No Project" option is made down here in table (5.1). This analysis aims to build up comparison between the three options in view of their impacts to the environment and the economic income.

The following values were used in this analysis:

- | | |
|-----------------------------------|---|
| <u>Duration of impact</u> | - <u>Short-term (temporary)= 1</u> |
| | - <u>Long-term= 2</u> |
| | - <u>Low= 1</u> |
| <u>Magnitude of impact</u> | - <u>Medium= 2</u> |
| | - <u>High= 3</u> |
| | - <u>Project site= 1</u> |
| <u>Extent</u> | - <u>Local area (within 5 Km²)= 2</u> |
| | - <u>Regional area (> 5 Km²)= 3</u> |

The scoring provided in table (21) is the product of a adding three values of the above mentioned. These relative values were used as general indicators of the significance of the impact. The option determined to have the highest scores are considered to be that of

5-Alternatives

most significant impacts. However, detailed analysis of the project environmental impacts are derived in section # 6.

It is worth mentioning that some criteria taken in this table shall not obey the same sequence. Those criteria are marked (+).

Table (22). Comparison of the three considered alternatives

		<u>HDD</u>				<u>Open-Cut</u>				<u>No Project</u>			
		<u>Duration</u>	<u>Extent</u>	<u>Magnitude</u>	<u>Scoring</u>	<u>Duration</u>	<u>Extent</u>	<u>Magnitude</u>	<u>Scoring</u>	<u>Duration</u>	<u>Extent</u>	<u>Magnitude</u>	<u>Scoring</u>
<u>ATMOSPHERE</u>	<u>Air Quality</u>	1	1	1	3	1	1	2	4				
	<u>Noise</u>	1	1	2	4	1	1	3	5				
<u>AQUATIC ECOSYSTEM</u>	<u>Water Quality</u>	1	1	1	3	2	1	2	5				
	<u>Sediment Quality</u>					1	2	2	5				
	<u>Fauna</u>					1	2	2	5				
	<u>Flora</u>					1	1	1	3				
<u>TERRESTRIAL ECOSYSTEM</u>	<u>Soil</u>	1	1	1	3	1	2	1	4				
	<u>Vegetation</u>	1	1	1	3	1	2	1	4				
	<u>Fauna</u>	1	1	1	3	1	1	1	3				
<u>HUMAN ACTIVITIES</u>	<u>Fishing</u>	1	1	1	3	2	2	2	6				
	<u>Land Use</u>	1	1	1	3	1	2	1	4				
	<u>Public Safety & Health</u>	1	1	1	3	2	1	2	5				
	<u>Aesthetics</u>	1	1	1	3	2	1	1	4				
	<u>Road Traffic</u>	1	1	1	3	1	1	1	3				
	<u>Natural Hazards</u>	1	1	1	3	2	3	3	8				
* <u>Economic</u>					3 ⁺				2 ⁺				1 ⁺
* <u>Technology Use</u>					3 ⁺				2 ⁺				1 ⁺
* <u>Cost</u>					3 ⁺				2 ⁺				1 ⁺

* values that have the sign (+) indicated that the rating is reversed, which means the rating of higher value is the best indicator and that of lower value is the worst one



6.1 INTRODUCTION

The previous sections have established the project and its various components, detailed the existing environmental settings and identified the legal and regulatory framework for the proposed pipeline.

This section identifies and, where appropriate, quantifies the primary biophysical and socio-economic effects expected to result from construction and operation of the el Nubaria el Sadat pipeline line. This section identifies specific project activities requiring environmental management and provides the mitigation measures and the impact significance and the risk assessment for these impacts, then determine the appropriate mitigation measures and assess the residual impact.

The maximum project impacts will be during the construction phase, while the operational phase carries very little of concern with respect to generating impacts.

A key conclusion of the baseline study is a majority of the impacts identified are amenable to mitigation. The impacts are evaluated against the site specific characteristics to identify the level of residual impact.

6.2. ASSESSMENT OF Risk & IMPACT SIGNIFICANCE

6.2.1. ASSESSMENT OF IMPACT SIGNIFICANCE

Potential Impact

Potential impacts identified based on project activities, environmental aspects and the resources/receptors that are susceptible to impacts. Scale/magnitude not yet considered in quantitative terms.

Mitigated Impact

Impact is quantified in terms of magnitude of effect experienced by receptors/resources, and taking into account mitigation and management measures, i.e. those designed into the project, together with those expected as standard good international practice for the activity involved

Assessment of Significance Of Residual Impact

The significance of the residual impact (i.e. with all mitigation considered) is evaluated against criteria established for the assessment. The criteria take into account such matters as the magnitude of the effect, the sensitivity/value of what is affected, legal limits and stakeholder concerns.

According to GASCO criteria, five categories of significance have been adopted, which are the severity then multiply the severity with the probability and then divide with the control and this to know in what degree is the risk.

$$R = \frac{S \times P}{C}$$

The five categories for severity is identified by:

- Determining the quantity.
 - Significant of Impact
 - Scale impact Range
 - Legislation
 - Detection Mechanism.
- Quantity.

Score	Criteria
3	High
2	Moderate
1	Low

- **Significant of impact.**

Score	Criteria
3	Fatal to human life
2	Kills fauna or flora/ effect human health
1	Slight impact/ discomfort

- **Scale Impact Range**

Score	Criteria
3	National /Transboundary
2	Local/ Region
1	Absorbed by local Nature

- **Legislation**

Score	Criteria
10	Not meeting legislation
1	In compliance with legislation

- **Detection mechanism.**

Score	Criteria
3	More than 24 hrs.
2	More than 12 hrs
1	Immediately

- **Probability.**

Score	Criteria
3	Continuous
2	Once a day
1	Once a week or less frequent

- **Controls.**

Score	Criteria
3	Available and effective
2	Mechanism in place but not reliable
1	Absence or not effective controls



The final score is the results of multiplication of all above mentioned criteria of the severity with the probability and divided by the control measures, where **the score above 32 considered as significant aspects**, while, **score under 32 is considered as insignificant aspects and score 32 will be medium risk**.

6.2.2 Control Measures

The next step is to consider the preventative and/or protective control measures needed to eliminate, reduce or minimise the risk for each identified hazard. The following is the preferred order of control methods described as the hierarchy of risk control.

a) **Elimination** is a permanent solution and should be attempted in the first instance. The hazard or environmental aspect is eliminated altogether.

b) **Substitution**: involves replacing the hazard or environmental aspect by one that presents a lower risk.

c) **Engineering controls** involve some structural change to the work environment or work process to place a barrier to, or prevent contact between, the worker or environment and the hazard or environmental aspect. This may include isolation or enclosure of hazards or environmental aspects, for example machine guards and mechanical handling devices.

d) Administrative controls

Reduce or eliminate exposure, of individuals to a hazard or the environment from an environmental aspect, by adherence to procedures or instructions. Documentation should emphasize all the steps to be taken and the controls to be used in carrying out the task both safely and with minimum impact to the environment.

e) **Personal protective equipment** relates only to hazards and their impact on personal safety risks. People wear it as a barrier between themselves and the hazard. The success of this control is

Dependent on the protective equipment being chosen correctly, as well as fitted correctly and worn at all times when required.

6.2.3 Final Assessment Result

To decide if the hazards identified have been controlled to a suitable level. The risk analysis stage took into account the control measures currently applied to the hazard and, therefore, the result of the analysis indicates the amount of risk that remains, or the residual risk of each hazard is:-

- a) Trivial;
- b) Tolerable risk
- c) Intolerable and /or Zero tolerance)

In general, high risks may require the provision of considerable additional resources involving special equipment, training, high levels of supervision, and consideration of the most effective methods of eliminating or controlling hazards.

Lower level risks may be considered as acceptable but actions should still be taken to try to reduce these risks further if possible within reasonable limits.

Project pollutants, toxic or noxious substances

6.3 AIR EMISSIONS

During Construction

Emissions of CO₂, CO, SO₂, NO_x and PM₁₀ will result during the construction from welding machinery sources and vehicles, the project area

Fume and Gas Risks in Welding and Cutting Operations:

1. Welding, cutting and brazing operations etc. can produce mixtures of fumes and gases, the composition of which depends on the welding temperature, arc intensity, electrode material and the gas mixture being used. Many of the fumes and gas produced are toxic.
2. Where gases/ fumes are produced. They must be effectively disposed of either by natural ventilation or forced mechanical extraction ventilation the aim being to draw away the gas /fume from the operator. Suitable respiratory protection should be available as a backup to the ventilation system employed, in case of inadequate air mixing or the failure of the forced ventilation system.
3. Examples of such fumes and gases and how they are produced are as follows:
 - A. Fumes are derived from the evaporation of the electrode and its coating, from the parent metal being welded/ cut or from contamination of the parent metal by grease, paints etc.



- i. The fumes consist of considerable quantities of very fine particles from the electrode coating. The coatings are varied and the particulate given off will depend upon their composition, such as iron oxides, silicates, Ferromanganese, carbonates of sodium, potassium, calcium, magnesium, etc.
- B. Gases evolved during welding and cutting may be produced from:
 - i. Normal atmospheric gases, e.g. nitrogen oxides and ozone.
 - ii. Shielding gases, e.g. carbon monoxide from carbon dioxide.
 - iii. External sources.

During Operation

Only air emission sources will be associated with the Fugitive emissions from pipeline relief valves, flanges, etc. and such events could be happened during planned preventive maintenance or unplanned venting of the pipeline

Table (23). Environmental Impact of the proposed air emissions

Emission	Environmental Impact
Carbon dioxide (CO₂)	A green house gas that contribute to climate change
Methane (CH₄)	Contributes directly to climate change by enhancing low level ozone production. Poisonous at high concentrations and can potentially enhance photochemical smog formation
Carbon Monoxide (CO)	Contributes indirectly to climate change by enhancing low level ozone production. Highly toxic to human health at concentrations of several percent and can augment photochemical smog formation.
Oxides of nitrogen (NO_x)	NO ₂ is a toxic gas, even at relatively low concentrations. NO _x also contributes to the formation of acid rain which can be deposited by wet and dry processes. Acid rain may impact both freshwater and terrestrial ecosystems. NO _x augment the formation of ozone at ground level when mixed with VOCs in the sunlight atmosphere. NO is a relatively innocuous species, but is of interest as a pre-cursor of NO ₂ .
Sulphur dioxide (SO₂)	SO ₂ is a toxic gas, and is known to contribute to acid rain (wet and dry) which may impact both freshwater and terrestrial ecosystems. Direct health effects potentially causing respiratory illness.
Volatile organic compounds (VOCs)	Non-methane VOCs associated with the proposed development are anticipated to be predominately hydrocarbons, which play an important role in the formation of photochemical oxidants, such tropospheric ozone. Many are also known or suspected carcinogens.

Mitigation Measures

During Construction

Air quality impact from machinery sources during construction phase should be minimized through routine inspection and maintenance of combustion emissions sources such as generators, diesel engines, welding machines ...etc.

Maintenance will ensure that equipment is operating efficiently and not producing excessive emissions.

In addition, measuring the exhaust emissions resulted from vehicles during patrolling annually according to GASCO measuring plan.

Impact Significance during construction

Based on the above emission control measures, the air emission impacts associated with the proposed project will be of “insignificant”.

Quantity=1 Significant of Impact=2 Scale Impact Range=2
Legislation=1 Detection Mechanism=1
So, the score will be 4 (Insignificant)

Severity (Environment): 4
Probability: 3
Control: 3
Risk: 4

During Operation

Engineering design approach shall avoid/ minimize emissions to the atmosphere from fugitive emission sources by applying good engineering practice by selecting suitable valve packing, seals...etc.

During the operation phase, the probable emission sources will be measured annually according to GASCO measuring plan. Also, inspection and maintenance program will be implemented to control fugitive emissions from above identified sources.

Impact Significance during operation

Based on the above emission control measures, the air emission impacts associated with the proposed project will be of “insignificant”.

Quantity=1 Significant of Impact=2 Scale Impact Range=2
Legislation=1 Detection Mechanism=1
So, the score will be 4

Severity (Environment):4
Probability: 3
Control: 3
Risk: 4 less than 32 (Insignificant)

6.4. DUST

Construction

Dust generated during construction of the new pipeline and that will result from clearing and earthworks, including excavation, trenching, levelling, and reinstatement operations. The major dust sources will be from the movement of vehicles transporting pipes and equipment to the work areas.

The occurrence and significance of the dust generation will depend upon meteorological and ground conditions at the time and location of activities. However, under normal meteorological conditions, dust impacts will be limited to within several meters of the construction area(s).

Dust generation can affect the ability of nearby vegetation to survive and maintain effective evapotranspiration. Potential nuisance impacts on workers and employees in project during the construction activities.

It may also pose health risks and irritation to humans, but typically where working in uncontaminated soils, wind-blown dust is normally only considered a nuisance to these exposed. The proposed route for el Nubaria- el Sadat pipeline is away from residential areas, public gardens and other social activities and there is no sensitive receptors like schools, hospitals, natural protectorates along the pipeline route.

Mitigation Measures

Construction and operation of the new pipeline will result in increased levels of dust generation. The effects of these activities upon local residents will be minimal as the



proposed project site is far away from the populated areas. Dust control measures will be considered include the following:

- Watering-down work areas.
- Efficient scheduling of sand deliveries.
- Maintain stockpiles at minimum height and keep any long-term stockpiles to the optimum shape to reduce the wind erosion.
- The use of machinery that will create dust will be avoided (wherever practically possible).
- Appropriate speed limits according to traffic laws will be established and enforced.
- Vehicles transporting materials with significant dust content to/from the site should be covered with dust sheet.

Impact Significance

The emissions of dust from construction activities, and its consequent impacts will be localized and the dust is likely to settle in close proximity to the area where clearance activity or other earth work is being carried out.

The dust generation is expected to be short-term, local and low to medium magnitude impact (depending on the dust control options to be utilised by the construction contractor).

Quantity=3 Significant of Impact=2 Scale Impact Range=1
Legislation=1 Detection Mechanism=1
So, the score will be 4

Severity (Environment):6
Probability: 3
Control: 3
Risk: 6 less than 32 (Insignificant)

Project noise and heat energy

6.5. NOISE

1 Introduction:



Noise induced hearing loss is the most common occupational illness. There are millions of people suffering as a result of working in noisy environments. A person's hearing stays fairly constant up to the age of eighteen assuming no exposure to any hazardous noise levels, and then it starts to deteriorate progressively.

The deterioration persons who suffer from the deafness find it increasingly difficult to understand conversation, particularly in a noisy environment, such as a party or coffee shop. They may find the noise at work becomes less unpleasant and claim that they have got used to the noise.

However this hearing damage is permanent, and there is no getting used to noise hazard. The damage continues as long as the person is exposed to the hazard. The rate of deterioration depends on the level of the noise, and the exposure period during the working day.

For most noise levels encountered in the oil and gas industry, the deafness can become noticeable after only a few years of exposure. Instantaneous damage can occur as a result of exposure to sounds with very high peak levels. Noise induced deafness is permanent and cannot be repaired. Even if noise exposure is stopped the continuing deterioration of hearing with age will result in increasing deafness. Hearing aids can only provide a partial, unsatisfactory remedy. Consequently it is important that the noise exposure of workers is assessed and appropriate steps taken to protect hearing from the very start of their working lives. If the noise levels generated from their activities start to have an adverse effect on the local populace.

GASCO Health, Safety and Environment Policy recognises that the protection of the health and safety of its employees and others involved or affected by its operations, and the protection of noise, and a prime responsibility of management at every level. Specifically GASCO will: endeavour to improve continually its HS&E performance, so that work related illness and accidents are reduced, and environmental emission, waste and the use of energy are decreased.

To comply with the requirements of this policy, and to fulfil the legal requirement of Regulation 4 (1994) for the protection of the environment this Safe Instructions for the Control of Noise at Work has been produced. The Safe Instructions applies the principles of internationally recognized legislation and best industry practice.

The noise produced as a result of GASCO operations, which affects the surrounding area, is defined as Environmental Noise, it is not likely that the general public is likely to suffer from



hearing damage from environmental noise; it is more a nuisance or disturbance which can make life uncomfortable or stressful for those who may be affected.

These factors should be considered as part of an Environmental Impact Assessment.

2 Daily Personal Exposure Level

Noise hazard is directly related to the level of sound and the period of exposure. It is required for an average exposure to be calculated, based on an 8-hour day.

This is the daily personal exposure level $L_{ep,d}$, and it is an exact equivalent of an 8 hour L_{eq} . There are two methods of measuring the $L_{ep,d}$. One is to use a noise meter to determine the noise level of different tasks likely to be undertaken by a person in a day, each in terms of L_{eq} .

The $L_{ep,d}$ is then calculated from the values of each L_{eq} and the exposure periods. Alternatively a noise dose-meter worn on the person can be used to provide a reading of the $L_{ep,d}$ directly.

There are advantages and disadvantages to both methods, but both are effectively estimating the $L_{ep,d}$. It is the value, which is very difficult to measure accurately in practice.

3 Noise Limits

To comply with the principles of best industry practice there is a duty on GASCO to reduce workers exposure to hazardous noise to as low as is reasonably practicable. In particular specific actions are required to be taken when exposures are likely to reach 85d B(A) $L_{ep,d}$, 90 dB(A) $L_{ep,d}$ and peak noise level of 140 dB. These are called action levels If however the personnel work 12 hour shifts the $L_{ep,d}$'s will be reduced to 83 and 88 dB(A) for the First and second action levels respectively.

These are therefore the limits which will be adopted for GASCO Operations, where personnel work shifts of 12 hours

Construction

Noise will be generated by equipments associated with the construction activities including clearing, ditch digging, drilling, sand blasting, facilities handling, vehicle movements, etc.

The main sources of noise associated with the proposed construction activities include the following:

- Construction activities.
- Equipments/ facilities delivery.
- Operation activities.

There are no any sensitive receptors (hospitals, schools, residential areas...etc) , and the machinery sources that could generate noise will be located away from social activities therefore the noise impacts are unlikely to be of significant concern.

The following activities are expected to be the most significant noise sources during the construction phase of the proposed project:

- Collection and transportation of sand padding.
- Trenching.
- Transport and delivery of equipments and facilities.
- Backfilling and reinstatement.

The above noisy activities would be similar to those associated with typical construction sites and it will have temporary impacts in setting each equipment/ facility. Construction noise levels associated with typical machinery based on “BS 5228: 1997 Noise and Vibration Control on Construction and Operation Sites” are summarized in the following table.

Table (24). Sound Pressure Levels of Construction Machinery

Construction Type	Machine/s	Noise Level (db)
Earth Moving	Compactors	78
	Front loaders/bull dozers	88
	Back hoes	76
	Tractors	71
	Scrapers	82



Construction Type	Machine/s	Noise Level (db)
	Caterpillar grader	84
	Pavers	74
	Dump truck	74
	Excavators	78
Material Handling	Concrete mixer	76
	Concrete pumps	81
	Cranes	81
Stationary	Pumps	82
	Generators	82
	Compressors	85
Others	Vibrators	74
	Vibratory roller	78
	Internal electric vibrator	78

Construction activities are likely to be confined to daytime and the noise levels will only affect the above-specified areas for a relatively short time, while the spread passes through.

A large number of heavy vehicles will be needed to transport the equipments and facilities from the supplier base to work site.

Mitigation Measures

Construction

It was concluded that the significance impact of noise is "insignificant". However, the following measures are recommended to be considered in order to control/minimize the noise impacts associated with the various facilities construction activities:

- Construction activities are allowed only during daytime and work is forbidden during night time
- Air compressors (if used during the construction phase) should be of the type, which is sound reduced with properly, lined and sealed acoustic cover and to be operated with the covers closed.
- All pneumatically operated tools should be fitted with properly maintained mufflers or silencer of the type recommended by the manufacturers.
- Any machinery, which is intermittent in use, should be shut off in periods of non use or, where this is impracticable to be throttled back to a minimum.
- For trucks & vehicles, a specific route will be determined away from populated areas



Actions to be taken

All workers exposed to at least the first action level of 83 dB (A) Lep,d are to be advised accordingly and given training in noise hazard awareness.

They are to be issued with suitable personal hearing protectors if they request them, but they are not obliged to wear them.

Personnel exposed to at least the second action level must wear their hearing protectors. The areas where the noise levels exceed 88 dB (A) will be classified as hearing protection zones, and entry into these is forbidden without wearing hearing protection.

When the noise level gives rise to exposures in excess of the second action level there is a requirement to reduce the noise to as low as reasonably practicable.

This cannot be achieved by relying on hearing protection, as engineering controls must be considered.

It is very rare for the peak action level to require any actions in areas not covered by the other two action levels.

Information, Instruction and Training

Where employees are likely to be exposed at or above any of the action levels then, GASCO is obliged to provide:

- Information on the risk to hearing, the availability of hearing protection and how to report any defects.
- Information on the employees' responsibilities.
- Instruction in the correct use and maintenance of hearing protection and the circumstances in which they should be worn.

Methods of Noise Control

It is a requirement of the procedure for the risk of exposure to hazardous noise is reduced to as low as is reasonably practicable.

Some methods of achieving this are described below.

- Specify noise-reduced equipment from manufacturers, suppliers or hire firms.
- Provide acoustic enclosures around noisy equipment.
- Fit silencers to exhausts.



- Install rubber dampers on machinery, which is vibrating.
- Install acoustic lagging around pipe-work
- Separate the noisy equipment from the workforce.
- Time restrictions on personnel working in noisy areas

Mandatory Hearing Protection Requirements.

By virtue of certain activities within Project, noise levels above the permissible limits may exist during Grinding, Sand Blasting, Painting in addition to compressors and other internal combustion engines. Therefore, appropriate hearing protection shall be required for the workers immediately involved in these activities in addition to other personnel working nearby and who could be affected by such noise levels.

However, in order to ensure adequate and appropriate type of hearing protection for personnel, any person who may become exposed to the above-mentioned noise generating activities must strictly adhere to the following requirements:

1 Use of Ear Muffs:

- a) Sand Blasting Crew.
- b) Grinding inside pipes or enclosed spaces.

2 Uses of Ear Plugs:

- a) Grinding in open air.
- b) Workers nearby grinding and sand blasting sites.

3 Provision of Hearing Protection Equipment.

Personnel who require either of the above two types, shall be identified by the HSE Department in conjunction with the concerned Departments and necessary arrangements for issuing of the appropriate type shall be handled by the HSE Department.

4 Noise Assessments

If it is likely that employees will be exposed to at least the first action level of 83 dB (A) $L_{ep,d}$, then GASCO is required to employ a competent person to carry out a noise assessment. This will assess the noise levels and provide sufficient information to help



GASCO meet its obligations with regard to noise control, hearing protection and training of personnel.

A record should be kept of such an assessment, which should be repeated whenever there is a significant change in the work activity. As a rough guide, an assessment of the daily personal exposure will be required if people at normal conversation distance have to raise their voices to be understood clearly.

It would be rare for measurement of the peak sound levels to be required, but these may required were personnel are exposed to explosive sound from cartridge tools or detonators, or from high impact noise, such as from piling operations.

The action levels refer to daily exposure levels , but for the construction industry with varying exposure patterns, it may be necessary to treat all working areas where the average noise level (Leq) reaches 83 or 85dB(A), as places where the Lep,d's are likely to be reached or exceeded.

Also, assessments can usually be based on noise levels measured in a working area with estimates of the length of time personnel are likely to spend there. Alternatively assessments may have to be based on estimates of exposure to specific noise levels for certain tools or jobs, rather than on detailed measurements of each workers exposure.

Impact Significance

Subsequently, the impacts of the noise will be only as much as the duration of the construction activities, and therefore, the impact is "insignificant".

Quantity=3 Significant of Impact=1 Scale Impact Range=2
Legislation=1 Detection Mechanism=1
So, the score will be 6

Severity (Environment):6
Probability: 2
Control: 3
Risk: 4 less than 32 (Insignificant)



Operation

The pipeline itself is inherently quiet under normal operation and the noise is probable only during planned shutdown and unplanned venting

Impact Significance

Quantity=1 Significant of Impact=1 Scale Impact Range=2
Legislation=1 Detection Mechanism=1
So, the score will be 2

Severity (Environment):2
Probability: 2
Control: 3
Risk: 1.4 less than 32 (Insignificant)

Mitigation

Due to the pipeline will pass in the vicinity of city of el sadat, GASCO will notify the public community through media in case of any preventive maintenance that could produce noise , in case of unplanned venting due to emergency cases , GASCO will apply the emergency plan that cover the emergency case and restore the elevated noise level to its normal condition

6.6 HEAT STRESS

Employees who have symptoms or conditions of heat stress, heat stroke, and/or heat exhaustion should seek immediate medical attention from a professional medical provider.

Heat stress may occur any timework is being performed at elevated temperatures or when protective clothing is worn. Heat stress symptoms include fatigue, anxiety, and decreased concentration, dexterity, or movement. If the body's physiological processes fail to maintain a normal body temperature because of excessive heat, a number of physical reactions can occur ranging from mild to fatal. Because heat stress is one of the most common and potentially serious problems that workers encounter, regular monitoring and preventive measures are vital. Employees must learn to recognize and treat the various forms of heat stress. Table(25)

Workload	Activity	Examples
Light	Sitting, with moderate movements of arms and legs	Desk work; typing ;driving in light traffic
	Standing, doing light work with mostly arm movement	Assembly-line work
	Casual walking	Supervising a worksite.
Moderate	brisk walking	Delivering mail
	Sitting, with vigorous arms and leg movement	Delivery heavy machinery; industrial cleaning
	Standing, doing light to moderate work including some walking.	Picking fruit and vegetables.
	Moderate lifting or purchasing	Warehouse work, loading and unloading of trucks
Heavy	Construction tasks	Sawing, digging; shovelling; sledgehammer work, roofing
	Intermittent heavy lifting , pushing or pulling	Restocking shelves
	Climbing stairs with heavy gears	Fire fighting

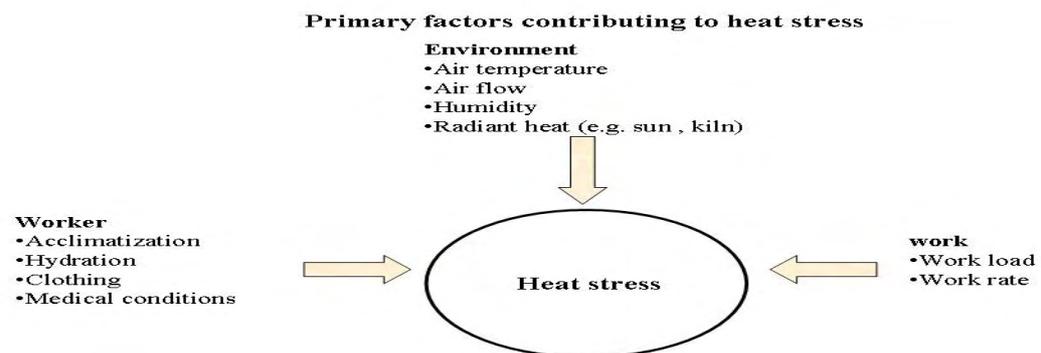


FIG (12)

Mitigation Measures

At all projects/facilities, the following protocols will be followed:



- Suggest that employees drink 16 U.S. ounces (473 ml) of water before beginning work in the morning and after lunch. Provide disposable 4-ounce (118 ml) cups and water. Urge employees to drink 1—2 U.S. gallons (3.8—7.6L) of water per day. (Note that all drinking water will be in accordance with CP 233, Drinking Water and Ice)
- Provide a cool (preferably air-conditioned) area for rest breaks. Discourage the use of alcohol during nonworking hours, and discourage the intake of coffee during working hours. Monitor employees for signs of heat stress. An employee with high blood pressure must be monitored often, and extra precautions should be taken (e.g., drink more water).
- Acclimate employees to work conditions by slowly increasing their workloads (i.e., do not begin work activities with extremely demanding tasks).
- Provide cooling devices to aid natural body ventilation. An example of a cooling aid is long cotton underwear that acts as a wick to help absorb moisture and protect the skin from direct contact with heat- absorbing protective clothing. Because these devices add weight, their use should be balanced against worker efficiency.
- If running water is available, install showers and/or hose-down facilities to reduce body temperature and cool protective clothing.
- Ensure that adequate shelter is available to protect personnel from heat, as well as cold, rain, or snow, which can decrease physical efficiency and increase the probability of both heat and cold stress. If possible, set up the command post in the shade.
- Maintain good hygienic standards by frequent changes of clothing and showering. Clothing should be permitted to dry during rest periods. Employees should immediately report any skin problems to their supervisor.

Heat Stroke

Heat stroke is an acute and dangerous reaction to heat stress caused by a failure of the heat-regulating mechanisms of the body (i.e., the temperature control system that causes sweating stops working properly). During an episode of heat stroke, the body temperature can rise so high that brain damage and death may result if the person is not cooled quickly.

The symptoms of heat stroke include red, hot, dry skin (although the person may have been sweating earlier); nausea; dizziness; confusion; extremely high body temperature; rapid respiratory and pulse rate; and unconsciousness or coma

Mitigation Measures

The victim of heat stroke should be cooled quickly to prevent permanent brain damage or death. Soak the victim in cool but not cold water, sponge the body with cool water, or pour water on the body to reduce the temperature to a safe level, 102 °F (39 °C). Do not give the victim coffee, tea, or alcoholic beverages. Observe the victim and obtain medical help.

Heat Exhaustion

Heat exhaustion is a state of weakness or exhaustion caused by the loss of fluids from the body. This condition, although less dangerous than heat stroke, must be treated.

The symptoms of heat exhaustion include pale, clammy, moist skin; profuse perspiration; and extreme weakness. The body temperature is normal, the pulse is weak and rapid, and breathing is shallow. The victim may have a headache, may vomit, and/or may be dizzy.

Mitigation Measures

Move the victim to a cool place, loosen clothing, place the victim in a head-low position, and provide bed rest. The normal thirst mechanism is not sensitive enough to ensure body fluid replacement. Have the victim drink 1—2 cups (237—473 ml) of water immediately and every 20 minutes thereafter until symptoms subside. Total water consumption should be about 1—2 U.S. gallons (3.8—7.6L) per day. Consult a physician, especially in severe cases.

Heat Cramps

Heat cramps are caused by perspiration that is not balanced by adequate fluid intake. Heat cramps are often the first sign of a condition that can lead to heat stroke.

Heat cramps are characterized by acute painful spasms of the voluntary muscles (e.g., abdomen and extremities).



Mitigation Measures

Move the victim to a cool area and loosen clothing. Have the victim drink 1—2 cups (237—473 ml) of water immediately and every 20 minutes thereafter until symptoms subside. Total water consumption should be 1—2 U.S. gallons (3.8—7.6L) per day. Consult a physician.

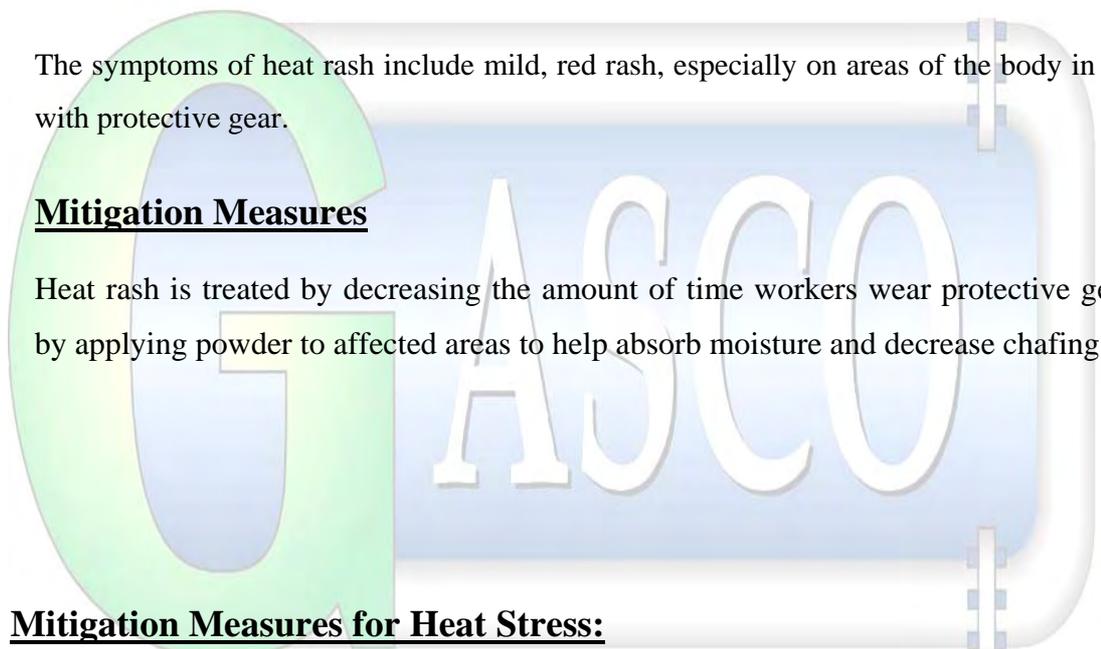
Heat Rash

Heat rash is caused by continuous exposure to heat and humid air and is aggravated by chafing clothes. The condition decreases a person's ability to tolerate heat.

The symptoms of heat rash include mild, red rash, especially on areas of the body in contact with protective gear.

Mitigation Measures

Heat rash is treated by decreasing the amount of time workers wear protective gear and by applying powder to affected areas to help absorb moisture and decrease chafing.



Mitigation Measures for Heat Stress:

Since, GASCO has an Environmental Management system ISO 14001 in which it must be complies with the legal and other requirements; so, GASCO must comply with the law 4/94 in which it identifies the limits of Heat Stress.

Follow the instructions of treatment mentioned above for each case.

Impact Significance

Quantity=3 Significant of Impact=2 Scale Impact Range=1
Legislation=1 Detection Mechanism=1
So, the score will be 8

Severity (Environment):6		
Probability: 1		
Control: 3		
Risk: 2	less than 32	(Insignificant)

6.7. SOILS

Construction

The construction and laying activities would result indirect disturbance of soil and specific geological features. Impacts will include localized alteration of the soil profile within the trench footprint, soil compaction in the immediate vicinity because of vehicle and construction equipment operations.

Potential impacts on the soil will start during construction and how long they endure will depend on the success of reinstatement.

The main impacts on soil quality associated with project construction activities will be associated with the following impact sources:

- Excavation of the trench and associated facilities-laying activities.
- Impacts associated with waste generation/management.
- Potential chemicals/fuel spills or leaks.
- Damage to important geological resources.

There is no erosion affected the soil by the wind as after the construction the soil is covered by black basalt.

Construction activities will generate additional solid wastes as well, including food refuse, trash, scrap wood and metals, oily rags and empty product drums. Additionally, spills and leaks may also occur from vehicles and heavy equipment used during the construction operations, which may result in soil contamination.

Potential soil contamination may also be associated with waste handling/disposal practices and potential spillage and/or leaks during the course of the construction activities. However, with proper waste management procedures being followed such impacts could be controlled and/or minimized.



Also, improper solid waste management could result in soil contamination.

The principal direct environmental impact of soil quality associated with the facilities is the potential soil contamination from the following sources:

- Spills or leaks from construction machinery.
- Waste generation/management.
- Accidental spills or leaks.

Although the above impact (i.e. soil contamination) will be localized within the spillage zone/area, but potential migration of such contamination to groundwater aquifer may represent significant environmental risk.

Mitigation Measures:

- Re-use spoil material as fill and concrete aggregate and as a construction material for the site preparation.
- Develop and implement hazardous chemical management plan and avoid refueling and lubrication in sensitive areas.
- Environmental Management Plan provides a Waste Management Plan describing the collection, sorting, storage and disposal of wastes generated by construction and operation activities.
- Based on Environmental Management plan, in the case where a chemical spill would occur, the procedures in place would ensure that the spill is cleaned up quickly and with minimal impact on the environment.
- Spill contingency plan will be implemented in case of accidental spills or leaks during the construction phase.

GASCO has a comprehensive emergency plan in case of any emergency situation like pipeline rupture or leaks. (with the attachments)

Impact Significance

Based on the above mentioned Mitigation measures, it was concluded that the soil impacts associated with proposed activities generation will be of “insignificant”



Quantity=2 Significant of Impact=2 Scale Impact Range=1
Legislation=1 Detection Mechanism=1
So, the score will be 4

Severity (Environment):4
Probability: 2
Control: 2
Risk: 4 less than 32 (Insignificant)

6.8. GROUNDWATER SOURCES

Groundwater along the proposed pipeline occurs at a range of groundwater depths along the pipeline construction. The main impacts on groundwater quality associated with facilities construction activities will be associated with the following impact sources:

- Impacts associated with waste generation/management.
- Potential chemicals/fuel spills or leaks.

The potential impacts on groundwater quality associated with the construction activity may include potential spills/leaks to groundwater from fuel storage, waste handling, etc. However, with proper waste management and spill prevention/control measures, these impacts could be controlled/minimized during the construction phase of the pipeline.

Improper solid waste management could result in soil, surface water or groundwater contamination.

Mitigation Measures

GASCO will develop and implement an Environmental Management program supported with a Waste Management Plan describing the collection, sorting, storage and disposal of wastes generated by construction and operation activities.

Impact Significance

Based on the above mentioned Mitigation measures above, the impact significance of facilities construction on groundwater is therefore, considered as “insignificant” as follows:



Quantity=1 Significant of Impact=2 Scale Impact Range=1
Legislation=1 Detection Mechanism=1
So, the score will be 4

Severity (Environment):4
Probability: 1
Control: 3
Risk: 4/3 less than 32 (Insignificant)

6.9. SURFACE WATER

There are no main rivers, main canals along the route of pipeline, only two small canals used for agricultural activities and the pipeline will be underneath the bottom of such canals by HDD technique to avoid any harmful impacts that could alter the marine features of water canals .

- the source of hydrostatic test water will be from the Nubaria power station where the main source of water to Nubaria power station is from Nubaria conduit which is about 500 meter from the power station, the amount of water needed is about 11.000 meter cube and the discharge of this water after finish the test will be again into the nubaria conduit but not before tested for any harmful or dangerous chemicals and the discharge of the water will be in form of dosage in order not to make any effect on the marine life.

in addition several water samples will be analyzed to assure compliance of water quality with water law requirements

Quantity=4 Significant of Impact=2 Scale Impact Range=21
Legislation=1 Detection Mechanism=1
So, the score will be 16

Severity (Environment):16
Probability: 1
Control: 3
Risk:5.2 less than 32 (Insignificant)

6 10 ECOLOGICAL IMPACTS

Construction and lying of the proposed facilities is not expected to have impact upon the local environment.



6.11. LANDSCAPE AND VISUAL IMPACTS

Visual impact is a subjective issue, which depends on the scale of a development, the context of the surrounding land use and the presence or absence of sensitive receptors.

The main land-based structures associated with the project, will be the new constructed gas valve rooms provided for the project as the utilities above the ground but it is constructed in specific work area which have no visual impact.

Quantity=1 Significant of Impact=1 Scale Impact Range=1
Legislation=1 Detection Mechanism=1
So, the score will be 1

Severity (Environment):1
Probability: 1
Control: 3
Risk: 1/3 less than 32 (Insignificant)

6.12. ARCHAEOLOGY AND CULTURAL HERITAGE

The pipeline route does not interact with the important archaeological sites of Egypt, as it does not contain any cemeteries and temples.

However, There is no activities will be started in el Nubaria el Sadat pipeline until GASCO gets all the necessary approvals from archaeological authorities. Moreover continuous supervision from archaeological authorities will be conducted during the whole period of construction activities

It worthy to note that GASCO had a different previous pipeline & metering station projects that had been constructed within the vicinity of proposed area of el Nubaria and Sadat city (the previous pipeline that extends from el Abo homos to el nubaria) and this project got the necessary approvals from archaeological authorities and now operating without any impact on local cultural heritage

Potential impacts to archaeology are only likely to occur during construction activities, as no earth works or ground investigations will take place during operation activities.



Quantity=1 Significant of Impact=3 Scale Impact Range=3
 Legislation=1 Detection Mechanism=1
 So, the score will be 9

Severity (Environment):9
 Probability: 1
 Control: 3
 Risk: 3 less than 32 (Insignificant)

6.13. EROSION CONTROL & SITE RESTORATION

No erosion will happen since the soil at gas valve rooms will be covered by the black basalt.

Impact Significance

In the light of above management, the impact on the soil erosion will be "insignificant".

Quantity=1 Significant of Impact=1 Scale Impact Range=1
 Legislation=1 Detection Mechanism=1
 So, the score will be 1

Severity (Environment):1
 Probability: 1
 Control: 3
 Risk: 1/3 less than 32 (Insignificant)

6.14. Socio Economic IMPACTS

6.14.1. Economics & Employment

Construction

During construction of the proposed project and associated infrastructure, it is expected that the local and regional economies will be beneficially impacted. The regional economy will benefit primarily by increased employment opportunities and diversification of skill base within the existing workforce. As well as enhanced employment opportunities, the project will create considerable non-technical jobs for local enterprises, such as security for the



provision of goods and services. During the construction phase, local firms will be considered for contracts to provide food, building materials, earthmoving, etc.

The project will not result in negative social changes like migration or change the demographical or the traditional lifestyle of Nubaria and Sadat communities.

Overall, the proposed gas project is in accordance with national development plans formulated by the Egyptian oil sector/*GASCO*.

Employment

- During construction of the project, up to 350 personnel will be required; all of them will be Egyptian nationals. In addition, there will be a requirement for additional employee for operation of new units of about 40 persons .

Operation

The aim of el nubaria el sadat pipe line is to increase the amount of natural gas to upper Egypt and to increase also the gas amount supported to Cairo.

Impact Significance

Based on the above the economics impacts associated with the proposed project will be of “positive”

Consequence = Positive – Activity has net positive and beneficial affect resulting in environmental improvement.
Significance = + ve

There is no risk resulted from Socio Economic.

6.15. PROJECT BENEFITS

5.15.1. Generic Environmental Benefits

Natural gas offers substantial environmental benefits over oil and coal as a source of fuel:



- Natural gas contains less carbon and more hydrogen than oil and coal and so results in the generation of lower amounts of carbon dioxide per unit of energy output. Compared to other fossil fuels, it also produces lower emissions of nitrogen oxides when burned.
- Natural gas contains no solid particulates or inorganic compounds that may give rise to particulate emissions or ash production.
- Natural gas produced from indigenous sources can be made available at costs, which are significantly lower than the cost of importing oil or gas and, in many cases, lower than costs of importing coal.
- Whilst some of the NGLs will substitute or replace other less environmentally friendly fuel sources, some will represent new or additional consumption. The balance between replacement and new consumption is beyond the scope of this EIA and has therefore not been considered.

Impact Significance

Based on the above the economics impacts associated with the proposed project will be of “positive”

Consequence = Positive – Activity has net positive and beneficial affect resulting in environmental improvement.
Significance = + ve

There is no risk resulted from Socio Economic.

6.16. Land use Effects

6.16.1 .Construction and Operation

The facilities of the project will not require any resettlement of individuals or communities from their homes..

All construction workers will undertake an induction course before working on the project.

This will include appropriate environmental management procedures as well as the
November 2009 90 *Egyptian Natural Gas Co. (GASCO)*



maintenance or restoration of all existing land use facilities including keeping all drains, fences and gates in an "as is" condition. Access into the project area will be restricted to those authorized project personnel and subcontractors who have undergone site specific safety training and in accordance with the approved procedure including the wearing of appropriate Personal Protective Equipment (PPE).

Impact Significance

Concern arises around safety for the workers and subcontractors during construction and operation. However, *GASCO*'s emergency plan will be implemented in case of emergency

Impact Significance

In the light of above management, the impact on the soil erosion will be "insignificant".

Quantity=1 Significant of Impact=1 Scale Impact Range=1
Legislation=1 Detection Mechanism=1
So, the score will be 1

Severity (Environment):1
Probability: 1
Control: 3
Risk: 1/3 less than 32 (Insignificant)

6.17. CHEMICALS

Chemical substances are used regularly throughout for a wide variety of purposes. Typical examples are fuels, solvent, cleaning agents, lubricants and paints. Although many chemicals come in liquid form, others may be present as solids or gaseous, some chemicals may be present as a result of production processes, while others can be produced as a result of environmental factors,

Virtually all-chemical substances are toxic to the human body. A toxic substance is one, which has a biological effect on the body, possibly causing breathing problems (asphyxiation), or damage to various tissues in the brain, kidneys, lungs or nervous system. All chemicals can have a biological effect on the body. The degree of risk or hazard will depend on how they are handled and the extent to which the body is exposed to them. One of the principal objectives of scientists engaged in occupational hygiene work is to reduce



exposure levels to toxic substances to a minimum, by substituting less toxic materials, providing protection against their effects, and / or reducing the time to which the body is exposed to them.

Hazardous Substances:

1. Effects on the body:

The effects on the body of exposure to chemicals can be chronic or acute, include immediate discomfort. E.g. burning sensations, sore, etc while chronic effects from long term exposure and are usually not apparent until many years later. The effects of exposure can also be classed as local or systemic. A local effect is damage to an external part of the body, e.g. an acid burn on part of the skin, while a systemic effect is damage inside the body, e.g. to one of the body's internal organs. Chemicals can be absorbed through the skin, inhaled into the lungs, or ingested through the mouth. However there are a number of inbuilt mechanisms, which protect the body from absorption of some classes of chemical through the skin. For example it is nearly Impervious to hydroxyl, carboxyl and ionized substances, while hydrocarbons, fats and esters will go through it with relative ease.

Certain critical organs have definite protective screens. A brain - blood barrier exists which prevents many ions from reaching the brain tissue, even when they are present in the blood.

The liver and kidneys perform the vital function of cleansing the body of most of the toxic substances, which enter it, but these organs may be damaged in the process.

Acute exposures put additional stress on the liver and kidneys. The first effect of acute poisoning is usually severe stress, similar to shock, circulation and respiration and loss of

The brain's blood supply. However, by blood shunting, the liver and kidneys are among the first organs to have their blood supply cut off to protect these organs from chemical damage. Long periods in this condition can cause them to atrophy or be damaged in other ways.

2. Occupational Exposure Limits:



Guidance notes on occupational exposure limits are updated annually. Occupational exposure limits refer to control and recommended control limits. The recommended limits should not be exceeded. They are considered to represent good practice while not in themselves legally enforceable.

There are two types of exposure limit - long term and short term. The long-term exposure limit is concerned with the total intake of the chemical over a long period and is normally based on periods of eight hours per day for situations where only very short exposure is required. Tables of short term exposure limits, based on the maximum level of exposure over a 10 minute period, should be referred to.

In cases where work shifts exceed 8 hours per day, the exposure limit must be reduced in proportion to the extra time a person is present in a contaminated environment

3. Identification and Labeling:

There are many international standards and regulations relating to the identification and labeling of dangerous materials. Probably the best-known are those issued by National Fire protection Association (NFPA) and ASTDR (Agency for Toxic Substance and Disease Registry). In addition, many nationally based safety regulations place a duty on manufacturers and suppliers to provide information, which will ensure that users are protected if they follow the written instructions. Labels giving accurate user information must be provided for the transportation and supply of individual chemicals.

Typical information to be included on labels includes:

- Name and address of manufacturer and! Or supplier.
- Trade and chemical names of the substance.
- An indication as to the particular risks involved in handling or using the substance.
- Warning about safety factors to be observed.
- Pictorial representation of the main hazard (s).
- All chemicals should be appropriately labeled, even when they are not considered to be dangerous, since unlabelled chemicals invite the assumption that they are harmless in every situation.

4. Location and Type of Label:

Labels must be securely fixed to containers and clearly visible. They should be made of a material, which is capable of surviving 3 months immersion in seawater. Tie on labels are not advised as they can be easily damaged or removed. Labels should remain on empty containers, as the risk to handlers may be just as great if the containers were still full.

TYPES OF HAZARD:

1. Flammable material:

Practically all combustion takes place between oxygen and a fuel in its vapor or other finely divided state. Excess heat may cause some of the chemical to vaporize and can easily lead to the presence of a flammable atmosphere, e.g. paint thinners. The flash point of a chemical classified as flammable should be less than 38 c (100 F).

2. Toxic materials:

Any substance, which has an effect on the body should be classified as toxic, e.g. for hydrogen sulfide the effect may be a short term acute response such as eye irritation, or the result of long term exposure may be chronic leading to the development of some form of occupational disease.

3. Corrosive materials:

These include strong acids and alkalis, e.g. caustic soda. These materials tend to destroy their containers and leak into the storage area. Some are stable, while others react violently with moisture. Acid mists corrode structural materials and equipment as well as being harmful to personnel.

4. Harmful! Irritant substances:

The combined transport and user label identifies materials not covered by other classifications, but may still cause some minor damage to the body, e.g. ethylene glycol (anti - freeze) can be irritating to the eye and to the skin.

5. Oxidizing agents:

Oxidizing agents release oxygen, either at room temperature or when subjected to heat. They should always be stored in a separate area from other chemicals, as they can

provide the oxygen needed to fuel a fire in the event of unfavorable conditions occurring, examples are chlorates.

5. Explosives:

This classification includes materials, which, under certain conditions of temperature, shock or mechanical action, can decompose rapidly to cause an explosion. Explosives should be stored in a separate area, well away from highly populated locations and only be used by trained personnel.

Mitigation Measures

STORAGE OF HAZARDOUS SUBSTANCES.

1. Storage areas:

- Hazardous chemicals should be stored in separate storage areas away from densely populated or high-risk areas.
- The floor should be sealed, to prevent leakage of spilled chemical into other areas, and there should be rallied sills on doorways, to provide bundling or containment within the store
- The area should be well ventilated to prevent the build up of toxic, flammable or explosive fumes.
- The storage area should comply with manufacturer's recommendations regarding temperature, humidity, etc.
- There should be sufficient access space to prevent containers being accidentally dislodged and damaged. Incompatible chemicals e.g. flammable substances and oxidizing agents should to be stored in same area.

2. Receipt and storage arrangements:

- Newly received containers should be checked for leaks before they are brought into storage. Chemicals should be stored in their original containers. Containers should not be stored above head height.
- All areas must be free from litter, and spills must be wiped up as they occur.
- Empty containers should be removed, and disposed of as hazardous waste.
- Appropriate hazard warning signs must be disposed of as hazardous waste.
- Appropriate hazard warning signs must be displayed on all access doors.



- Hazardous chemicals should not be dispensed or mixed, in the storage area.

HANDLING AND MIXING:

Chemicals should not be mixed or diluted unless the label clearly states that it is safe to do, so, hazardous chemicals should be mixed in a separate room suitably equipped for this purpose, by personnel who are fully protected for the work to be carried out.

MIXING HAZARDOUS CHEMICALS:

- Mixing should only take place within a bounded area large enough to contain all chemicals being mixed.
- The mixing area should be well ventilated, with forced ventilation or extraction where required.
- Platforms and working surfaces should be at the correct height to eliminate lifting and unnecessary handling of containers.
- - The area should be tidy and free from tripping hazards.
- - Checks should be made on whether spills may be flushed into drains, or disposed of in some other way.
- The area should be equipped with an emergency shower and eyewashes.
- Mixing containers should be thoroughly cleaned before use they should be constructed of suitable material for the chemicals being used.
- When diluting a chemical, it should be added to water, e.g. add acid to water- not the other way round, unless instructions on the label state otherwise.
- When transferring chemicals, the new containers should be fully labeled and personnel using the chemical made fully aware of associated hazards and safety precautions.
- Empty containers should be removed from the mixing area and disposed of as hazardous waste.

EMERGENCY PROCEDURES:

- Material safety data sheet (MSDS) should be available for every chemical in use.
- This data sheet should specify detail procedures to be followed in an emergency, including.
- Whether access to the contaminated area should be prevented.
- The necessity for using protective clothing.

- Disposal procedures.
- Protection of drains and other local services.
- First Aid treatment.

LONG TERM IMPROVEMENTS:

Steps should be taken to eliminate mixing by attempting to buy chemicals ready mixed. Alternatively, component chemicals may be purchased in a safer form, e.g. solid rather than Liquid, eliminating splashing, or in pellet form rather than as a powder, reducing levels of airborne dust.

Impact Significance

In the light of above management, the impact on the soil erosion will be "insignificant".

Quantity=2 Significant of Impact=2 Scale Impact Range=2
 Legislation=1 Detection Mechanism=1
 So, the score will be 4

Severity (Environment):4
 Probability: 2
 Control: 3
 Risk: 8/3 less than 32 (Insignificant)

6.18. WASTE

Construction & Operation

The construction phase of the project is the one when most waste is likely to be generated.

The stripped top soil will be replaced carefully in position after the completion of the facilities construction. The top soil will be spread between the track at the side of the working width and the pipe trench and the remainder. Excess excavated material to be removed and disposed of in line with local regulations.

Waste oil from the servicing of vehicles and miscellaneous building debris, including spent welding rods, packaging waste, used drums, wood, scrap metal, and building rubble will be generated during the construction phase of the project.



The estimated daily domestic rubbish will be generated during construction is 100 kg approx. It will be transported off-site by trucks to the general authorized landfill.

The disposal of the septic waste and domestic wastewater generated at the control facility located at construction locations will be collected in septic tank then removed through municipalities trucks regularly

During Operation phase it will be treated by the primary sewage treatment unit and the produced treated water will be used in vegetation activities around the site that will reflect positively on the local environment. .

Mitigation Measure:

GASCO has an Environmental Management system according to specifications and requirements of ISO 14001 in which it identifies a Waste Management Procedure, as it describes how it disposes its waste.

Wastes from construction phase are handled and disposed off in accordance with GASCO/Sub-contractor procedures, adverse impacts are not expected and no specific mitigation measures should be needed.

Detailed Waste Management Plan should be developed and implemented for the construction phase of the proposed project including the following:

- Waste storage, transfer and handling.
- The requirements for consignment notes.
- Inspection and auditing.

Additionally, all personnel employed for the construction phases of the proposed project should receive formal waste management awareness training, particularly regarding the correct waste segregation, storage and labeling procedures and potential recycling of wastes.

The Waste Management Plan specifies the types of wastes that will be generated as part of the construction process as follows:

- Non-hazardous waste ; solid and liquid (domestic refuse, industrial refuse, sewage sludge);



- Gaseous wastes (vents, exhausts, fire-fighting agents, refrigerants).

Data relevant to the waste produced as a result of Contractor's constructional activities shall be monitored and recorded into an environmental register on an ongoing basis and will be made available for inspection.

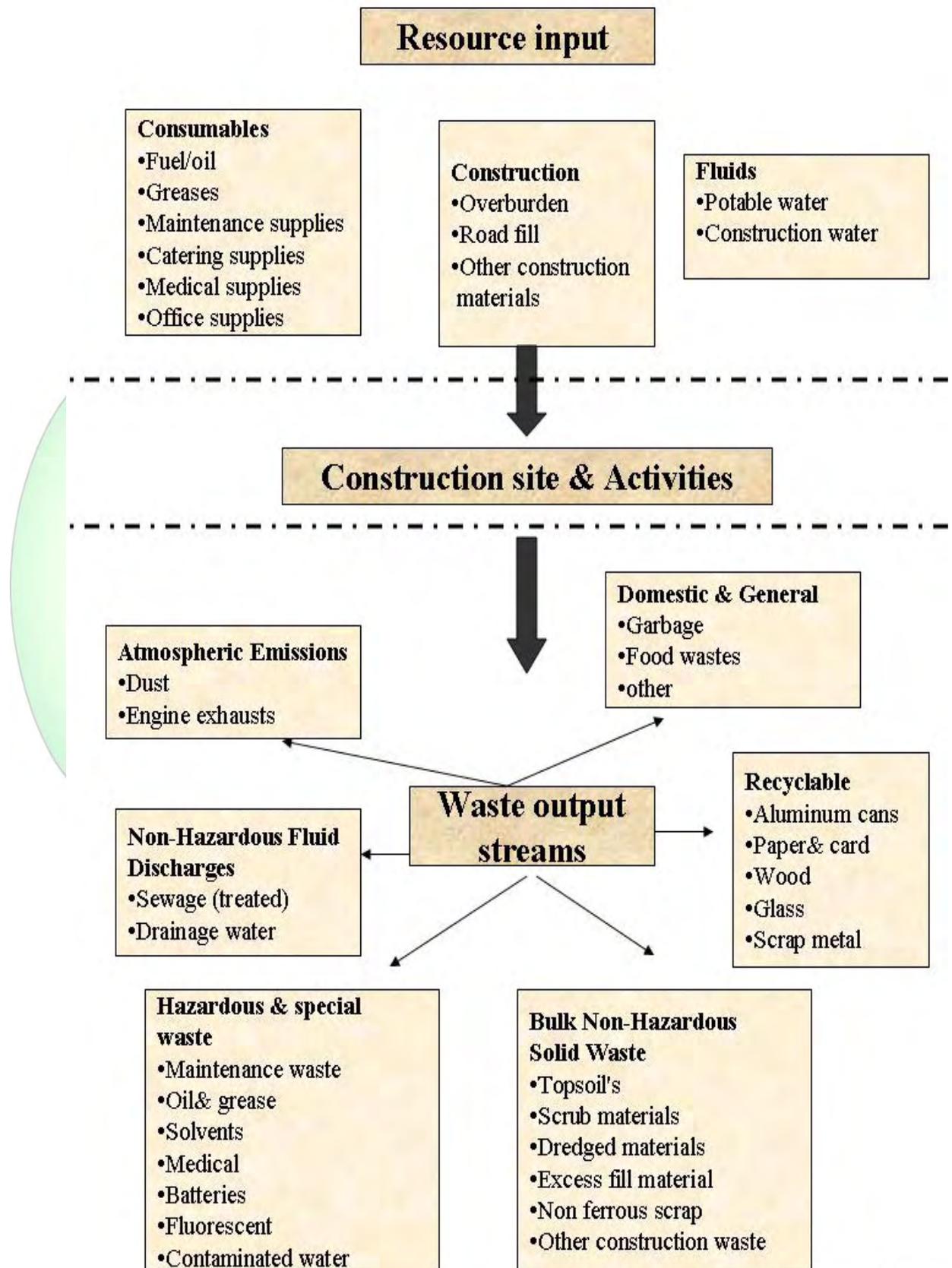
During the operation of the facilities, little waste will be generated and there will be a low potential risk for significant environmental impact.

Impact Significance

Based on the above the wastes associated with the proposed facilities activities will be of “insignificant”.

Quantity=3 Significant of Impact=1 Scale Impact Range=1
Legislation=1 Detection Mechanism=1
So, the score will be 3

Severity: 3 (L)
Probability: 3
Control: .3
Risk= 3 less than 32 (Insignificant)



GASCO waste management procedure



6.19. TRAFFIC

Construction of the facilities will require a large-scale transport operation in order to deliver equipments to the work site and associated construction activities. No information is yet available on the number of vehicle movements that will be required but, based on experience of other similar project.

The environmental impacts typically associated with traffic generated during pipeline construction projects include:

- Dust from vehicles traveling on non flat roads.
- Noise.
- Potential interference with roads/traffic during facilities construction activities.

After getting all the necessary approvals from El MUNOFIA governorate & general authority for roads and bridges, the pipeline will cross a group of roads some of them are main roads like Cairo Alexandria desert road and other secondary roads that pass into private farms. The main roads will be crossed via HDD technique and other secondary crossing will be via open cut technique. GASCO will support all the necessary safety controls that keep the traffic safe and secure , these controls such as barricades ,warning signs , light for traffic at night ,

The traffic movements at main roads like Cairo Alexandria desert road will not be affected by HDD technique since this technique will not cut the road, in addition GASCO will choose an appropriate day like Friday when there is no high traffic movement on the road.

For roads that will be crossed via open cut technique, GASCO will develop alternative roads for entrance the farms and the crossing will be done after arrangement with the owners of these farms .

The movements of personnel to and from the construction area can also be expected to cause dust generation.

GASCO selected the pipeline route away as practically as possible from sensitive receptors however GASCO will implement several controls that will assure no nuisance issues such as noise and dust will cause disturbance for traditional lifestyle of EL MUNOFIA people.



These controls may include restrictions on lorry movements to prevent noise nuisance in the early morning/late evening

A low degree of control will be needed over contractors' vehicles as the desert surface outside the work area is completely empty from any signs of life either plants or animals. Though there will be limitation of speed in the desert area, also driving in any protected areas will be prohibited. There should be prohibition on uncontrolled off road driving.

It is recommended that a specific transport / journey management plan be drawn up by the contractor and approved by GASCO prior to works commencing. This should address the need to minimize environmental impacts from traffic and the proposed mitigation approach.

Impact Significance

If proper control measures are being followed during the construction phase of the proposed project, the potential transport/traffic impacts are expected to be "insignificant" as follows:

Quantity=1 Significant of Impact=1 Scale Impact Range=1
 Legislation=1 Detection Mechanism=1
 So, the score will be 1

Severity (Environment):1
 Probability: 1
 Control: 3
 Risk: 1/3 less than 32 (Insignificant)

7.0- Environmental Mitigation & Management

7.1. Environmental Mitigation

INTRODUCTION

This section identifies feasible and cost-effective measures that may reduce potentially the significant adverse environmental impacts to acceptable levels. It also describes each mitigation measure, including the type of impact to which it relates and the conditions under which it is required. It gives estimation to any potential environmental impacts of these measures and provides linkage with any other mitigation plans.

7.1.1. AIR EMISSIONS

There is no significant air emissions sources expected to be associated with the various pipeline's activities included in the scope of the proposed project.

Construction

Air quality impact from machinery sources during construction phase should be minimized through routine inspection and maintenance of combustion emissions sources such as generators, diesel engines ...etc.

Maintenance will ensure that equipment is operating efficiently and not producing excessive emissions.

Operation

The only emissions during operation phase are fugitive from pipeline's valves, flanges and intermittent venting from the sectionalizing valves provided along with the pipeline.

Engineering design approach shall avoid/minimize emissions to the atmosphere from fugitive emission sources by applying good engineering practice by selecting suitable valve packing, seals...etc.

Inspection and maintenance program will be implemented during the operational phase to control fugitive emissions from above identified sources.

7.0- Environmental Mitigation & Management

In addition, measuring the exhaust emissions resulted from vehicles during patrolling annually according to GASCO measuring plan.

7.1.2. DUST

Construction

Construction and operation of the pipeline will result in increased levels of dust generation. The effects of these upon local residents will be minimal as the pipeline route generally traverses land that is sparsely populated. Dust control measures will be considered include the following:

- Watering-down work areas.
- Efficient scheduling of sand deliveries.
- Maintain stockpiles at minimum height and keep any long-term stockpiles to the optimum shape to reduce the wind erosion.
- The use of machinery that will create dust will be avoided (wherever practically possible).
- Vehicles transporting materials with significant dust content to/from the site should be covered with dust sheet.

Operation

- Appropriate speed limits according to traffic laws will be established and enforced.

7.1.3. NOISE

Construction

It was concluded that the significance impact of noise is "insignificant". However, the following measures are recommended to be considered in order to control/minimize the noise impacts associated with the various facilities construction activities:

7.0- Environmental Mitigation & Management

- Air compressors (if used during the construction phase) should be of the type, which is sound reduced with properly, lined, and sealed acoustic cover and to be operated with the covers closed.
- All pneumatically operated tools should be fitted with properly maintained mufflers or silencer of the type recommended by the manufacturers.
- Any machinery, which is intermittent in use, should be shut off in periods of non use or, where this is impracticable to be throttled back to a minimum.
- For trucks & vehicles , a specific route will be determined away from protected areas

7.1.4 SOILS

Construction

Measures will be employed to minimize the overall environmental impact of soil erosion. It is recommended that all topsoil removed during the excavation works of the pipeline trench to be reused once the pipeline has been installed. , the excess of the top soil will be transported to local authority's to keep the original level of the agricultural lands , the location of the topsoil stockpiling should be defined before starting the construction activities. Waste reduction, minimization, reuse and recycling and spill prevention measures should be incorporated into the management system of the construction phase of the project.

The main mitigation methods needed to avoid unnecessary damage to the important topographic features identified along the route are to control access to these areas by providing temporary fencing, and to prevent vehicles driving in the desert areas, except along the right of way.

The supply of batch should be controlled and be from non-sensitive areas away from the pipeline route corridor.

7.1.5. GROUNDWATER SOURCES

To minimize the potential for Impact on the quality of the groundwater, the following control measures will be undertaken:

7.0- Environmental Mitigation & Management

- All fuel storage will be appropriately bounded and refueling will be undertaken.
- If any leakage or spillage occurs, construction contractor will implement spill response measure to contained and clean up any contaminated soil before reaching groundwater.

Waste reduction, minimization, reuse and recycling and spill prevention measures should be incorporated into the management system of the construction phase of the project.

7.1.6 SURFACE WATER

The risk of adverse environmental impacts to surface water quality during construction and operation of the pipeline will be minimized by adopting appropriate soil conservation measures, reducing the disturbed area and scheduling work, where practical, to avoid periods of high rainfall.

During backfilling, soil in the pipeline trench will be compacted and the material graded off such that surface water flow will not be impeded/diverted.

Disturbed natural drainage lines will be restored to their original level/contours and access tracks and any borrow pits will be constructed and aligned.

7.1.7. LANDSCAPE AND VISUAL IMPACTS

The disturbed and cleared appearance of the corridor will only be a short term visual characteristic because rehabilitation will be undertaken progressively once the pipe has been laid.

Rock dumping or backfilling on slopes which are visible from existing roads should be minimized as much as possible.

7.1.8 . ARCHAEOLOGY AND CULTURAL HERITAGE

In view of the importance of certain parts of the pipeline route from an archaeological perspective, it is recommended that a watching brief should be maintained during construction in the event that any further archaeological artifacts or fossils appear.

7.0- Environmental Mitigation & Management

It is worth mentioning that before determining the route of the pipeline, a consultation with the Egyptian Archeological Agency was made to identify any archeological or historical sites known along the pipeline route. An approval and permission of the route were given from the agency. However, any finds of archaeological and palaeontological material should be reported immediately to Egyptian Archaeological Agency.

7.1.9. EROSION CONTROL & SITE RESTORATION

Increased erosion may occur in, or as a result of disturbed areas such as the pipeline corridor and access tracks. Where possible, the clearing of vegetation will be limited and rootstock left in-situ. Re-vegetation of disturbed areas will be undertaken.

7.1.10 SOCIO-ECONOMIC IMPACTS

7.1.11.1 Land use Effects

Construction and Operation

The pipeline route chosen to be far from residential areas to avoid any disturbance which may be happened during construction and operation.

7.1.11. 2. WASTE

Construction & Operation

The construction phase of the project is the one when most waste is likely to be generated. Providing these wastes are handled and disposed off in accordance with GASCO/Sub-contractor procedures, adverse impacts are not expected and no specific mitigation measures should be needed.

Detailed waste management plan should be developed and implemented for the construction phase of the proposed project including the following:

- Waste storage, transfer and handling.
- The requirements for consignment notes.
- Inspection and auditing.

7.0- Environmental Mitigation & Management

Additionally, all personnel employed for the construction phases of the proposed project should receive formal waste management awareness training, particularly regarding the correct waste segregation, storage and labeling procedures and potential recycling of wastes.

The Waste Management Plan specifies the types of wastes that will be generated as part of the construction process as follows:

- Aqueous waste (comprising hydrotest water, drainage water, treated / untreated sewage water);
- Non-hazardous waste ; solid and liquid (domestic refuse, industrial refuse, sewage sludge);
- Gaseous wastes (vents, exhausts, fire-fighting agents, refrigerants).

Data relevant to the waste produced as a result of Contractor's constructional activities shall be monitored and recorded into an environmental register on an ongoing basis and will be made available for inspection.

7.2. Environmental Management

7.2.1 INTRODUCTION

The Environmental Impact Assessment broadly identifies environmental impacts, positive or negative, that are associated with the concerned project. An Environmental Monitoring Plan will be established in order to:

- Obtain, where appropriate, data for the environment during construction, commissioning and operation of the project;
- Monitor the emission and discharges associated with all stages of the project, including the operation stage.
- Monitor any significant alteration of the physical, chemical or biological characteristics in the vicinity of the project and may be due to the project activities.
- Begin mitigation measures before these changes alter the natural processes and turn it to irreversible processes.

7.0- Environmental Mitigation & Management

7.2.2. GASCO ENVIRONMENTAL MANAGEMENT SYSTEM

As part of the HSE strategy GASCO intend to operate an integrated system for Safety, Health and Environmental Management System for construction and operations in accordance with the principles of the International Organization for Standardization's (ISO) Standard for Environmental Management Systems (ISO 14001) and Occupational Health Safety Assessment Series (OHSAS18001). This will effectively require GASCO to achieve and demonstrate sound environmental performance by controlling the impact of the development activities on the environment and committing it to the achievement of continual improvement.

GASCO has a specific Health, Safety and Environment (HSE) policy for their activities and projects This HSE policy and associated goals will guide and set the standards for the overall environmental management of this project.

The HSE goals that GASCO will strive to attain are:

- No accidents;
- No harm to people; and
- No damage to the environment.

GASCO will aim to attain this by minimizing the environmental and health impact of their business by reducing waste, emissions and discharges and by using energy efficiently.

The following box indicates the commitments that GASCO has pledged to implementing this policy.

- consult, listen and respond openly to our sponsors, our staff and those affected by our activities;
- work with national authorities, sponsors, contractors and suppliers to continuously improve our company standards;
- provide safe systems of work and identify and manage risks;
- set high standards for environmental protection;
- openly report our performance, good and bad; and

7.0- Environmental Mitigation & Management

- • recognize those who contribute to our HSE excellence efforts

7.2.2.1 EMP DURING CONSTRUCTION

The Construction Environmental Control Plan (CECP) describes the environmental management program for GASCO Construction personnel and their contracted entities during the construction and operation phases of Elnoubaria el sadat gas pipeline. It should be used in conjunction with the GASCO's Safety and Health Execution Plan. Specifically, the CECP includes detailed plans to implement a comprehensive program for managing environmental compliance during construction. The CECP assigns specific responsibilities for environmental compliance and emergency response during construction of the Project. It also addresses the processes for monitoring and mitigation (as necessary) of construction activities which could potentially impact the environment. These processes include environmental compliance review meetings, site inspections, subcontractor activity reviews, non-compliance reporting procedures, awareness training, and emergency action procedures.

The objectives of the CECP are to:

- Define specific requirements for compliance with all regulatory requirements, permit conditions, other applicable environmental documents and the Construction Contract.
- Clearly define the responsibilities and actions required during project construction to maintain compliance with the environmental requirements and to address emergency situations. .
- Provide the necessary procedures for communication, documentation, and review of environmental compliance activities.

7.0- Environmental Mitigation & Management

GASCO will manage the procedures contained in this plan during construction, up to commercial operation of the facility. Each subcontractor involved in construction activities will be provided with a copy of this plan and will be required to comply with its contents. Periodic reviews of the plan will be performed to ensure its adequacy, and the plan will be updated as required.

7.2.3 PROJECT OVERVIEW

PROJECT DESCRIPTION

The Project is concerned with the construction and operation of Elnubaria el Sadat gas pipeline. The pipeline starts from the valve room in front of EL NOUBARIA power station (*this valve room is the end of ABO HOMOS EL NOUBARIA pipeline*) with 69 Km length and 36" diameter, then it extends to the east parallel to the north wall of EL NOUBARIA power station, then it turns to the west parallel to asphaltic road in front of Othman Ibn Afan village, El Fattah village and Abu Baker El Sadiék village until it reaches El Maged village, then turns west in front of the power station and extends about 7 Km parallel to the asphaltic road, then turns south parallel to Wadi El Natroun road until crossing with Cairo-Alex desert road and extends parallel to SUMID pipelines in the eastern south direction until it reaches the off take of El Sadat city on Dahshour El Ameria pipeline.

PROJECT SCOPE (PHASES)

It consists of 9 packages:

Package one: preconstruction survey

Package Two: Right of way preparation

Package Three: pips stringing

Package Four: welding

Package Five: non destructive tests

Package Six: anticorrosion coating

Package Seven: excavation, laying, backfilling and restoration

7.0- Environmental Mitigation & Management

Package eight: pressure test, dewatering and drying

Package nine: commissioning & Start-up

7.2.4 SCOPE OF THE CONSTRUCTION ENVIRONMENTAL CONTROL PLAN (CECP)

The Plan is split into main sections, all of which shall be adhered to:

- Environmental Responsibilities — describes the responsibilities of all involved parties including GASCO Company, EGAS, the construction subcontractor and regulatory agencies such as the Egyptian Environment Affairs Agency (EEAA).
- Regulatory Requirements and Commitments, this lists the environmental legislation relevant to the Project and the commitments the Project has agreed to abide by.
- Environmental Management Controls — specifies the controls that will be implemented to ensure the effectiveness of the plan, such as training, monitoring, enforcement etc.
- Environmental Construction Controls — describes the environmental control measures to be carried out according to construction activity.
- Project Plans - contains the detailed plans / schemes for Emergency Response and Spill Prevention, Contaminated Land, Noise, Waste, Air Quality, etc. These project plans incorporate the environmental conditions laid down in the permits and the commitments made in the Environment Impact Assessment and subsequent correspondence.

7.2.5 ENVIRONMENTAL RESPONSIBILITIES

Project Manager

The Project Manager (PM) is GASCO representative responsible to GASCO and contractor management for the execution of GASCO contractual responsibilities. These responsibilities include ensuring environmental compliance with the Construction Contract, the environmental permits and approvals, and all applicable regulations.

Site Manager

The Site Manager (SM) is the GASCO representative responsible for overall construction management of the project in compliance with all applicable environmental

7.0- Environmental Mitigation & Management

commitments. The SM is ultimately responsible for overseeing implementation of the requirements set forth in the Scope of this Construction Environmental Control Plan (CECP). Communication of site environmental issues or status of site environmental compliance activities with GASCO or any other party shall be through the GASCO Site Manager.

The SM's duties include:

- Management of all day-to-day construction activities performed by GASCO and its subcontractor personnel,
- Responsibility for implementing and enforcing environmental commitments on-site,
- Reviewing performance of subcontractor activities at the site,
- Serving as the primary Site Emergency Coordinator (EC).
- Contracts to set up waste removal.
- General Services Superintendent
- Responsibility for supervising the Site Services Contractor
- Work with the Site Services Contractor to set up the cleanup crews and insuring that they are working effectively
- Establish the requirements for cleanup crews
- Dealing with project housekeeping issues.

Site Health, Safety and Environmental Supervisor

The Site HSE Supervisor will provide technical support services to the SM so that construction of the project proceeds in compliance with the project's environmental commitments.

Other specific duties include the following:

- Ensuring that all field engineering activities are planned and conducted in accordance with applicable environmental regulations and site-specific procedures.
- Direct liaison with the SM, the Project Environmental Coordinator (PEC), and Egyptian Government Agencies and Authorities (as directed by the SM).
- Management of the Project site environmental program on a day-to-day basis.

7.0- Environmental Mitigation & Management

- Distributing appropriate environmental commitment information to subcontractors and direct-hire personnel, and monitoring their compliance.
- Conducting regular field inspections of construction activities (including subcontractors) for compliance with contract, existing permits and approvals, and other applicable environmental regulations and commitments.
- Conducting the Environmental Awareness Training program for all sites new-hires and interfacing with the PEC to supplement/enhance the environmental training program materials.
- Serving as the Interim Emergency Coordinator in the absence of the SM.
- Performing hazardous waste identification/classifications as to waste type and hazard class for all wastes generated during construction activities.
- Maintaining records related to the handling, storage, and disposal of hazardous waste generated on-site in accordance with all applicable regulations.
- Identify locations for the waste containers.
- Provide input for selection of a waste management contractor.
- Target and deal with housekeeping issues through Site Supervision.

Subcontracts Administrator

The Subcontracts Administrator will:

- Enforce language in the subcontractors' contracts with GASCO that clearly dictates that subcontractors are responsible for complying with all applicable environmental regulations and GASCO site plans and procedures.
- Require all subcontractors to submit information to the GASCO Site HSE Supervisor on their activities which involve the use or generation of hazardous substances and wastes, or that can potentially violate the provisions of existing permits, or that have the potential to detrimentally effect the environment.
- Insure that each subcontractor supplies a list of the types and estimated quantities of waste and hazardous waste that they anticipate generating during their construction related activities.
- Verify that each Subcontractor has provided all necessary submittals as required (MSDS, Safety data sheets, etc.) for materials that they bring to the site.

7.0- Environmental Mitigation & Management

- The Subcontracts Administrator will also ensure that all subcontractors are provided with a copy of this CECP and that the following provisions are included in subcontracts related to construction practices, or the delivery, use, and storage of project-related materials and equipment on-site

Subcontractor shall fully comply with all applicable environmental laws, rules, and regulations.

Construction Subcontractor

It is the Construction Subcontractors' responsibility to ensure they read, understand, and adhere to the environmental requirements of their subcontract and perform all their work in an environmentally responsible manner.

- Comply with all the applicable National and local laws, safety regulations and standards.
- Obtain all permits necessary to comply with the laws and Decrees of the Arab Republic of Egypt.
- Attend environmental awareness training program.
- Maintain all records of environmental compliance activities including hazardous waste disposal.

Environmental Auditing

- Environmental Management Controls
- In order to achieve the objectives of the CECP, the following 'management controls' will be implemented. • The presence of a qualified Construction Environmental Coordinator
- Environmental awareness training for all employees (PETROJET and subcontractor) working on the construction site • Co-ordination meetings and communications network
- Compliance inspections and documentation
- Environmental monitoring
- Emergency Response Actions

7.0- Environmental Mitigation & Management

Environmental Awareness Training

The project will provide environmental awareness training for construction personnel as part of their regular induction, before they begin work on-site. Once employees have completed their environmental, health and safety induction a site badge will be issued to them which must be in their possession at all times.

The induction training will include:

- A project-specific briefing that highlights environmentally sensitive issues.
- A description of the measures required to protect the environment, including emergency procedures.
- Encouragement to ask questions, and/or make suggestions about work methods that may help protect the area's environmental resources.
- The program will be available throughout the construction period to provide training to new employees as they are added to the construction workforce.

Coordination Meetings and Good Communications

Good communications between all parties is imperative if the CECP objectives are to be met.

This will be achieved by:

- Management communicating their commitment to environmental issues to all employees.
- Weekly subcontractor coordination meetings to be held between GASCO and the appropriate subcontractors' site representatives. These meetings will discuss work status as related to environmental issues, problem areas, and discuss subcontractor compliance or non-compliance as well as health and safety issues.

Compliance Inspection and Documentation

The HSE Supervisor will conduct weekly scheduled site inspections and carry out spot checks whenever necessary. The scheduled inspections will encompass the entire site for the purpose of identifying compliance actions or potential problem areas. A report will be developed following each inspection itemizing and describing each problem area

7.0- Environmental Mitigation & Management

requiring corrective action. is an example of the type of report to be used. These reports will contain compliance actions that will be given to the Site Manager.

The Site Manager will ensure that appropriate corrective action is taken to correct reported deficiencies. A report will be prepared which describes the corrective action taken.

The site will also allow representatives and personnel of affected national and local agencies access to the site during business hours to:

- Review certification records
- Inspect and test monitoring equipment
- Sample pollutant discharges
- Assess non-compliance issues
- Have escorted access to the site to observe/inspect construction activities and monitoring to determine compliance with site permitting and certification.

7.2..6 EMERGENCY RESPONSE ACTIONS

The project is committed to establishing and maintaining a work place that minimises hazards to the human health and the environment from emergency situations (e.g. fires, explosions, unplanned material or liquid releases). Provisions laid out in the Spill Response and Spill Prevention Plan will be carried out promptly whenever emergencies occur which could threaten the environment.

7.2.7 ENVIRONMENTAL CONSTRUCTION CONTROLS

This section describes environmental control measures to be carried out according to construction activity.

7.2.7.1 Processing Plant

- The site area will be cleared and grubbed as necessary.
- Construction parking areas will be constructed by grading and adding stone to certain areas, where required.

Sedimentation basins (which will later become the storm water management basins) and drainage swales will be constructed during grading to collect runoff during grading,

7.0- Environmental Mitigation & Management

excavation, and construction. The concrete supply subcontractor will be responsible for ensuring there are no concrete spillages and that a bunded concrete washing area is available and used.

7.2.7.2 Project Environmental Plans

Note: The Environmental Impact Assessment identified that the site has little ecological interest as it didn't contain any sensitive or protected environmental areas.

7.2.8 EMERGENCY RESPONSE AND SPILL PREVENTION PLAN

7.2.8.1 Spill Prevention

The following procedures shall be carried out to reduce the possibility of a spill that may be harmful to the environment or to the health and safety of the staff.

- All stationary diesel and petrol operated construction equipment will have impervious drip trays placed beneath them during operation. Any spillages will be collected for appropriate off-site disposal.
- There will be stationary diesel fuel storage and dispensing area for mobile equipment. Stationary and tracked or crawler type heavy equipment will be fuelled by a fuel truck. The stationary diesel storage and dispensing area will have a containment membrane underneath and bunded area around it.
- Large permanent stores of potentially polluting material will be situated on an impervious base and surrounded by an impervious bund capable of containing a volume 10% greater than the largest storage tank. Valves shall be checked periodically to ascertain that they are closed.
- Special consideration shall be given to any leachates arising from the surface run-off around temporary stockpiles of materials (e.g. contaminated soil) on site and ensure that controls are put in place where there is a risk of pollution of controlled waters from such leachate.
- Higher levels of dust containment shall be used for contaminated excavated material than used for other material. Appropriate measures may include: use of fine water sprays to thoroughly moisten all surfaces and maintain surface moistness; use of protective fences or screens to provide shelter from winds; minimizing unnecessary

7.0- Environmental Mitigation & Management

handling of material, and; enclosure of excavated material in wind proof containers prior to removal from site.

- Appropriate precautions will be taken to, so far as is reasonably practicable, properly maintain storage areas and protect them and equipment from vandalism.
- A checklist and record of inspection for tanks, secondary containment, and containment materials (i.e., pads, boom, silt curtain).

7.2.8.2 Spill Response

In case of a release of petroleum or other chemical product, the following actions will be taken (note: the magnitude of the discharge/spill will determine the extent of the actions that have to be taken):

- Notify the HSE Supervisor or SM immediately.
- Only attempt containment and cleanup operations of accidentally discharged petroleum products/wastes when it can be performed safely.
- If spilled material is flammable, eliminate sources of ignition near spill area.
- When it can be performed safely, stop source of spill and contain spilled material using absorbent pads/booms within as small of an area as possible. The spill should not be rinsed away.
- The HSE Supervisor/SM will secure the area and establish perimeter control at a safe distance from the spill.
- Ensure staff and neighbours are evacuated if pollution is harmful when inhaled.
- Screen/cover stockpiles of polluted matter to prevent airborne dispersion.
- Seal off drains that polluting matter may enter.
- If an immediate threat to human health or the environment does not exist, the HSE Supervisor/SM will arrange for safe clean up of the spilled materials.
- Contaminated soils and clean-up materials from such spills must be handled properly, stored in a suitable container that is then labelled and stored in the appropriate location for subsequent disposal.
- If the pollution incident impacts on any resources the appropriate Agency or Authority must be contacted as soon as possible.

7.0- Environmental Mitigation & Management

Spill-response materials will be stored onsite in close proximity to the petroleum product/petroleum waste and chemical storage areas. Therefore, if a spill or leak does occur in sufficient magnitude, actions can be done to avert a major environmental problem.

Any spill shall be documented and reported. Basic information shall include: date, time, location, type and quantity of spilled material, description and cause of incident, action taken, name of person reporting the incident and recommended actions for ensuring the incident doesn't reoccur. It should be noted that if the incident had the potential to pollute the environment although has not yet done so then this will still be recorded to allow potential serious incident to be identified at an early stage and the appropriate corrective action implemented.

Staff shall be trained in the maintenance and use of spill response materials. Best endeavors will be adopted to ensure trained personnel are always present on site.

The owner of the pipeline is responsible for informing the EEAA of any emitted or discharged pollutants deviating from prescribed standards and any appropriate procedures taken to rectify them.

N.B this plan is to be used in conjunction with the Safety Plan.

7.2.8.3 Contaminated Land Plan

In the event that soil is contaminated measures will be taken to isolate, control, and restore these areas. Areas of surface staining shall be scraped and the soil segregated and disposed of in an appropriate manner either by off-site removal or treated on site. For Hydrocarbon impacted soil it is likely that excavation, stockpiling and turning the soil regularly with an excavator will allow the rapid volatilisation of most of the hydrocarbons, enabling the re-use of remediate soil as excavation back fill. Workers in contact with the hydrocarbon or sewage-impacted soil will wear protective clothing such as overalls and gloves. Also smoking, eating and drinking will not be permitted during earthworks activities, appropriate hygiene and washing facilities will be provided, and dust suppression measures will be adhered to.

The site supervisor will be made aware of the presence of these contaminants. .

7.0- Environmental Mitigation & Management

In the event of discovering material contaminated with oil or other hydrocarbons identified by sight (visible heavy impregnation) and smell, the SM and/or ES&H Supervisor shall be notified immediately. This visual classification shall be validated by laboratory analysis if required.

Affected earth will be delineated, excavated and placed within a covered tipper truck or skip for approved, licensed, off-site disposal. If any contaminated waste is to be stored temporarily on site it shall be immediately contained and labelled as 'Contaminated Waste' in Arabic and English. It shall be retained in a secure area away from sources of ignition. This area shall be separate from the storage area of non-hazardous waste and shall be a minimum of 17 m (50 ft) from surface waters where possible. Special Wastes shall be removed from the site as soon as is reasonably practicable. Special Waste will be disposed at a landfill site licensed to accept this category of waste. A working file will be maintained presenting records of contaminated materials encountered, details of monitoring and testing, and records of material disposed off-site.

7.2.8.4 Waste Management Plan

It is the Project policy to minimize and recycle waste materials, whenever possible, and to dispose of remaining wastes in full compliance with all applicable laws and permit conditions. The waste should first be classified before it can either be recycled or disposed.

Classification and Storage

Waste materials will be identified by the contractor and agreed with GASCO. They will be stored according to the following categories:

Non-Hazardous Industrial Waste - general construction and demolition waste and non-food garbage (paper, glass etc).

Hazardous Waste e.g. batteries, chemical wastes, paint tins, fuels, lubricants, and metal cleaning wastes etc. which remain after implementation of the minimization process, and contaminated land (these wastes shall not be mixed together).

For non-hazardous waste, specific area / areas should be designated for its storage before it is disposed of off site. An adequate number of containers shall be strategically placed throughout the construction areas and temporary facilities.

7.0- Environmental Mitigation & Management

Food waste should be kept sealed to minimize infestation of vermin.

Hazardous waste shall be retained in a secure area with an impervious bunded base. This area should be located away from sources of ignition and should be a minimum of 17m (50 ft) away from natural watercourses and drainage ditches.

Different types of hazardous waste should be kept separate as far as is possible to avoid adverse chemical reactions and facilitate eventual treatment. All containers should be sealed, accurately labelled in dual language, and be disposed of as soon as possible to a responsible waste handler. A register of all hazardous waste and disposal methods shall be maintained by the HSE Supervisor. MSDSs and Safety Data sheets will be supplied by the Subcontractors along with their contract submittals for use by the HSE Supervisor. Spill prevention measures will be adhered to.

Fire prevention systems and secondary containment should be provided for storage facilities, where necessary, to prevent fires or the releases of hazardous materials to the environment.

Standards for storage areas, management systems and disposal facilities will be agreed with the Competent Administrative Authority.

Note: Hazardous Waste is defined in Provision 19 of Law number 4 — Law for the Environment as: “Wastes of activities and processes or their ashes that maintain their harmful properties and have no subsequent original or substitutive uses, such as:

"Wastes resulting from the manufacture of any pharmaceutical products, drugs, organic solvents, printing fluid, dyes and painting materials".

Recycling

After minimization, effective waste management will include a recycling program. Although few recycling facilities exist in Egypt, the Project will investigate whether any local recycling facilities are available. For example, it may be possible to separate the non-hazardous waste off site by a local subcontractor who can get some useable material.

7.0- Environmental Mitigation & Management

Waste Disposal

Sanitary wastes will be collected and disposed of by a licensed waste disposal contractor who possesses a permit issued by the appropriate Authority. These wastes will be directed to a municipal sanitary wastewater treatment facility, in accordance with the applicable local regulations.

The HSE Supervisor will ensure that someone is appointed to monitor the collection and disposal of all waste materials and to ensure that containers are removed and replaced in a timely manner to avoid any possible double handling of waste materials.

Disposal sites will be subject to periodic audits, both prior to receiving waste and at intervals during construction.

All consignments of waste for disposal will be recorded, indicating their type, volume, destination and other relevant information, prior to being sent off-site.

7.3 EROSION AND SEDIMENTATION CONTROL PLAN

Land and water resources will be protected from encroachment of silt due to rainfall runoff by silt fence barriers. If high flows are experienced additional protection will be provided by the placement of baled straw along with the general silt fence protection. Throughout the construction of the Project, sediment and erosion control measures will be monitored regularly and repairs will be conducted to any measures found to be unsatisfactory.

7.4 SUPPRESSION OF DUST AND DIRT PLAN | AIR QUALITY PLAN

7.4.1 Mitigation Measures to Control Dust

It is the Project's policy is to minimize fugitive dust emissions at all times. GASCO, as the owner, is responsible for implementing the appropriate jobsite guidelines.

- Where possible, the contractor will select equipment designed to minimize dust emissions
- Activities that produce significant dust emissions will be monitored during periods of high winds and dust control measures will be adjusted to account for ambient conditions to minimize fugitive dust, GASCO will limit dust generating work

7.0- Environmental Mitigation & Management

activities that pose an immediate danger or significant nuisance to the construction workforce, general public or surrounding environment;

- Water sprinkling from a truck will be used in high traffic areas and in earthwork areas to suppress dust. This spraying will include areas where excavation and backfilling are ongoing and will be conducted at a frequency to keep the surfaces moist and prevent the generation of fugitive dust from being carried from the Development onto adjacent residential and commercial areas.
- Water spray dampening of soils and spoil will be undertaken to prevent dust blowing during hot and dry weather conditions;
- Deliveries of finely ground materials will be in bag form or stockpiled in specified locations where the material can be suitably covered.
- Where practicable, drop heights for material transfer activities such as unloading of friable materials will be minimized and carefully managed. Water sprays will be supplied and used during delivery and dumping of sand and gravel during periods of dry weather;
- Surfaced site roads will be prepared early in the construction programme, and vehicle speeds will be limited on Project site areas. Construction personnel will be required to enter the site over prepared surfaces and park in designated lots.
- Lightly traveled disturbed areas will be temporarily stabilized through watering or other suitable means.
- Temporary vehicular surfaces of crushed rock will be used in heavily traveled areas.
- The roads around the site, particularly at the site entrance, will be monitored on a regular basis. Should it be found to be necessary, the road in the vicinity of the site entrance will also be swept.
- Sheeting of Lorries on-site during transportation of friable construction materials, spoil and potentially wind blown material.
- If sandblasting operations are required, these operations will be located so as to minimize noise and dusting effects on adjacent work areas.
- Excavation faces not being worked will, if required, be sheeted.
- Subcontractors will be required to comply with the applicable regulations governing open-bodied trucks hauling sand, gravel, or soil between on-site and off-site areas. Loads will be fully covered and wheels will be cleansed where necessary

7.0- Environmental Mitigation & Management

to reduce dusting and transport of mud and soil off-site. These requirements are embodied within GASCO standard terms and conditions of all purchase orders. Any transgressions will be immediately brought to the attention of the hauler concerned. Failure to comply with this requirement will result in the offender being prevented from accessing the site.

- The onsite batch plant supplied by subcontractors will be required to come equipped with dust suppression systems installed to minimize the dust emissions.
- Should problem areas arise which result in excessive dust generation on-site, individual workers will have been instructed through their Environmental Awareness Training to notify their supervisor to facilitate the appropriate response.

7.4.2 General Air Quality Plan

Air emissions from construction related activities are generally minimized through mitigation measures. The most prevalent construction emissions are fugitive dust however minor emissions of NO_x, SO₂, CO, particulates and VOCs are likely from activities such as on-site painting, refuelling of equipment, application of adhesives and waterproofing chemicals and the incomplete combustion of fuel in construction equipment. Hence, there shall be no unnecessary idling of vehicles.

7.5. NOISE AND VIBRATION PLAN

7.5.1 Noise and Vibration Sources

The major sources of noise during construction are expected to be:

- Outdoor construction equipment during site preparation, excavation, rock breaking and crushing, and backfill operations
- Outdoor construction equipments during construction of plant buildings and facilities.
- Truck deliveries during each phase of construction.
- Steam blows required for cleaning of main steam line and hot and cold reheat lines (start-up only).
- The noise levels due to construction activities are not continuous, but vary from low levels during periods of little activity to fairly high levels during times of peak

7.0- Environmental Mitigation & Management

activity. Off-site construction related noise impacts are not expected to be significant

7.5.2 Noise and Vibration Mitigation Measures

Prior to commencing particularly noisy or vibration generating operations, the SM will inform project manager of the intended working hours. In the event of any concerns being expressed, the noise and vibration monitoring programme will be reviewed and may be amended to adjust the frequency and location of measurements.

Noise control measures will be implemented to keep project noise levels to a minimum. These measures follow below:

- All plant equipment employed on the construction will comply with the relevant Egyptian noise limits that apply to that equipment.
- Use will be made of low noise level equipment when practical.
- All internal combustion driven equipment will be kept in proper working order and all exhaust equipment will be present and in good repair.
- Modifications to equipment and vehicles will be prevented that may increase the noise emitted by the muffler and exhaust system(s) above that emitted by the muffler and exhaust system originally installed.
- All stationary plant equipment shall be located so as to minimize noise impact at all occupied commercial and residential properties.
- Plant equipment in intermittent use will be shutdown during the intervening periods between uses, and there will be no unnecessary idling of vehicles.
- Demonstrate that construction vehicles are equipped with horns or other signaling devices which produce a sound sufficiently loud to serve as a danger warning, but shall not be unnecessarily loud or harsh; and use these devices only to provide danger warnings.
- Wherever possible, alternative means of undertaking the works will be considered and where possible employed in order to reduce noise and vibration levels to a minimum.
- Restriction of piling and operation of heavy plant to between 07:00-19:00 Saturday to Thursday, and not during official holidays
- Restriction of night-time activity (19:00-07:00) to low noise-generating activities

7.0- Environmental Mitigation & Management

- Location of noisy fixed plant as far as practicable from the worker colony.

7.6. TRAFFIC MANAGEMENT PLAN

The key potential impacts to the existing transport infrastructure are likely to take place during construction activities and include:

- Changes in traffic conditions in terms of delay and congestion;
- pedestrian and cyclist conflicts with road traffic; and
- Changes in traffic related noise

To minimise potential impacts during construction and operation a Traffic Management Plan (TMP) will be developed by GASCO. Typical components of TMP are outlined below

The Traffic Management Plan should assess the likely number and intensity of vehicular movements and outline methods which will be adopted to minimize the overall footprint. The Traffic Management Plan should include the following:

- identification of key sensitivities along proposed access routes;
- strategic analysis of projected vehicular movements and destinations and outline of access routes to minimize total area of new road to be built;
- identification, demarcation and construction of all access routes;
- trip minimization;
- outlines speed limits;
- vehicle equipment;
- vehicle maintenance and refuelling;
- inspection, auditing and reporting; and
- Driver competency.

7.0- Environmental Mitigation & Management

TABLE(26) The environmental control plan during the construction phase will be as the following:

Ser.	Aspect	Point / source	Responsibility	Required Monitoring / measurement		Remark
				Art – Law / Regulations	Frequency	
1	Noise	Generators	Contractor	(44) – 4/94	as per request	
		Working site				
		welding machines				
		Compressors				
		Heavy trucks				
2	Air Quality	Working environment	Contractor	(45) – 4/94	As per request	
		Vehicles		(37) – 4/94		
		Welding machines		(37) – 4/94		
		Heavy trucks		(37) – 4/94		
		Ambient air		(42) – 4/94		
3	Water Quality	Industrial waste water	Contractor	(14) – 44/00	Bi annually or as per request	
		Potable water		108/95		
4	Heat Stress	Heat generating equipments	Contractor	12/2003	as per request	

E.M.P during Operation

The environmental control plan during operation phase include monitor and measure the key characteristics of El nubaria El Sadat operation and activities that have actual or potential significant environmental impact, in order to evaluate the environmental performance of the GASCO's sites regarding the legislation, objectives and targets.

According to the legal requirements and to the specifications and requirements of GASCO HSE management system which settled according to specifications of ISO14001& 18001 the key characteristics such as (Noise, Cathodic Protection, gas leak, earthing, lighting,.....etc) are regularly measured to insure fulfilment of standard and legal requirements. Solid wastes, garbage and used oils are monitored to ensure safe and appropriate disposal. Fuel, water and power consumption is monitored for resources conservation.

7.0- Environmental Mitigation & Management

Some measurements are performed by means of measuring equipment, which is available at chemical labs or HSE dept., and other measurements are assigned for professional organizations to perform.

The Site manager reviews the results of such measurement, monitoring and its evaluation on a regular basis to ensure that the occupational health, safety and environmental performance are adequate.

Table (27) the environmental control plan during the operation phase will be as the following:

Aspect	Art-Law/Regulation	Frequency
Cathodic Protection	GASCO Local Regulation	Monthly
Earthing	GASCO Local Regulation	Monthly
Gas Leak	EGAS Regulation	Every 3 month
Exhausted Emission	Law No. (4/1994) – (44)	Yearly
noise	Executive Decree of Law 12/2003 (Decree 216/2003) Table No. (1&2)	Every 12 month
PRESURE & DIFF PRESSURE	GASCO REGULATION	DAILY

El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



8.0 Conclusion

1. The route corridors for El Nubaria-El Sadat pipeline examined in this report include unavoidable sections of environmental sensitivity. All resembled in the agricultural areas that shall be penetrated by the pipeline. However, loss of these lands will be temporary. The lands taken due to establishing the valve rooms are small areas. Adequate compensation for the landowners shall be considered. In areas of intensive mixed agriculture, the refinement of the route location will play a very important role.
2. The pipeline route encounters crossing of main highways, railways ..etc. the technique that shall be used in main crossings in HDD, which is characterized over the traditional ways by being implemented with very little disruption to surface activities, requires less working space, and performed more quickly than open-cut methods.
3. Pipeline route encounters crossing main water bodies and several small canals. Crossing of these water bodies is of significant impacts resulting from trenching of the water canal floor for placement of the pipe and laying the pipe on the sea bed. However, the HDD technique that project owner adopted for crossing the main large canal to avoid these impacts.
4. The route will follow as much as practical the existing corridors.
5. The major sections of the pipeline pass within featureless topography; most of the route passes through flat areas. However, some areas along the route may require flattening some topographic features and removing small hills. This must not be done drastically.
6. As for the social sensitivities, it was noted that the majority of the route sections does not pass through intensive population. Only few scattered houses found in the agricultural areas owned by the owners of the farms. However, the route does not require displacement of houses
7. The pipeline route will penetrate a variety of land use sites. GASCO attained approval for the pipeline from the relevant authorities for constructing and operating pipeline.
8. The pipeline route avoids both protected areas and archeological areas.

An overall conclusion is that the pipeline has, almost, no significant impacts to the surrounding environments. The project may commence taking into consideration the mitigation measures and monitoring plan mentioned in this study.

9.0 public consultation

Public consultation session

This section summarize the Public Consultation that was undertaken in support of El Nubaria EL sadat / El sadat El Fayoum gas pipeline EIA, **as El Sadat EL Fayoum pipeline route is in the same corridor with SUMID pipelines (this corridor is specified to transfer petroleum products)** to ensure that the project team was aware of local culture, economic and environmental sensitivities. The process of the Public Consultation helped to ensure that the potential benefits to **GASCO** were maximized and the impacts minimized as early in the project design as possible. The Public Consultation was requested by the European Investment Bank (EIB) and the program was designed to comply with the best practice in this field.

The public consultation program involved regular meetings with the national regulator and representatives of the Governorate of EL Monofia. Early at the planning stages, meetings were held with senior representatives at the location to discuss logistical arrangements and ensure that the session would both be appropriate and relevant to the local community.

The meeting held On Sunday the 13 of December 2009 at 10.00 am at the meeting hall of Al-Sadat city authority. The meeting was set up to allow participation from regional opinion formers such as government officials especially those in the environmental section, representatives of the regional branch of the Egyptian Environmental Affairs Agency (EEAA), the media (Newspaper: representatives from the local newspaper attended). Also, good participation from citizens was marked. A large number of farmers especially the land owners attended the meeting.

To well achieve this session, personal invitations were sent to all attendees. More over, a non technical summary was published besides some brochure and magazines for the company were given to the attendees. It is also worth mentioning that **GASCO** has put the

9.0 public consultation

EIA study on the company web site www.GASCO.com.eg for public review for any queries.

The main concerns of the meeting were:

1. *To familiarize all groups of people with project*
2. *To reflect the positive and negative impacts of the project on the surrounding environments and communities, and the proposed mitigation measures, those are to be taken in order to relief or eliminate the bad effects of the project.*
3. *To clarify the compensation that shall be made for people who lost land and the overall impact on them and on their environment.*

At the beginning, the meeting was introduced by Eng. Hassan El Mahdy; the Chairman of **GASCO**. Then the word was given to *H.E. Samy Emira* the Governor of El Monofia, who expressed his acknowledgment for **GASCO** concern for the public and local authority.

A presentation was introduced by the HSE General Manager, explaining the history of the company and the consideration of the safety and environment aspects in the company policy.

An open discussion was made after all presentations were introduced in which the participants expressed their opinions and worries about the project. The commonly asked questions and answers are introduced here after.

The people stressed on two main concerns:

- **1st**: *The amount of compensations that will be given to the land owners.*
- **2nd**: *A disruption of the cultivated lands happens during the construction phase, which causes damage to crops and/or trees around the area.*

As for the first item, **GASCO** replied that the compensation for the land owners shall be made according to the decree No. 318/1993 declared by the Ministry of Agriculture and

9.0 public consultation

Reclamation, and more satisfactions to landowners will be provided in a proper way considering *GASCO* rules.

Regarding the second item, *GASCO* is committed to obey the international construction code using the BAT, and in case of violation, direct contact with HSE General Manager on 149 telephone numbers to address any complaint.

Commonly Asked Questions And Answers

First Question :

Why did the pipeline follow the route from Al-Sadat to Al-Fayyoun ?

Answer : as gas producing wells are in the north in the Mediterranean sea area ,Abo-Homos /Nubaria was executed to feed Nubaria power station while Nubaria /Sadat pipeline supplies gas to residential areas and the industrial areas of Al-Sadat City. A new pipeline extends from Sadat to Fayyoun and further to support south valley pipeline taking into full consideration residential areas ,cultivated lands and the number of consumers while setting the route of the pipeline .

Second Question :

Why was not gas supplied to some areas and villages in Monufia governorate? (Maged Elwany – Women Organization –Sadat City) ?

Answer: Supplying gas involves many factors: the availability of safe and secure routes for the pipelines and taking into consideration whether or not there will be future projects in co-ordination with the governorate. According to Eng . Sameh Mohamed Samy ,Assistant general manager of Egypt gas the company entrusted with the task of supplying gas from main pipelines to residential areas that the percentage of occupancy in some areas is very low and being not cost-effective it has delayed the process of supplying gas .Execution of the plan is in progress .

9.0 public consultation

Third question :

Do you intend to hold other consultation meetings for Nubaria/Al-Sadat /Al-Fayyoun gas pipeline project and are those meetings part of the regulatory compliance dictated by law ? Mr. Alaa Mansour – journalist and T.V. announcer.

Answer: Of course other public consultation meetings will be held in the 6th of October City as the pipeline passes from Al-Sadat to Al-Fayyoun near some residential areas but within the route of other oil products – pipelines belonging to Sumid petroleum company. Public consultation meetings are legally obligatory in case where pipeline intersect with residential or agricultural areas or when they affect the activities of the areas where they pass or intersect .

Fourth question :

When will you start the execution of the project ?
Eng .Ahmed Shahin, Secretary of the National Democratic party unit of Sadat City .

Answer: Execution will start during 2010 subject to and after approval of EEAA

Fifth question:

Will you take samples from water used in the hydrostatic test of the pipeline and analyze them before discharging ?

Answer: Water used in the hydrostatic test of the pipeline will be subject to analysis before being discharged and results will be submitted to the Sanitary Drainage Holding Company of Sadat City.

Sixth question

Will there be equipment for detecting gas leakage (gas leakage detectors)? How quick is the company in responding to contingencies and emergencies?

El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



9.0 public consultation

Member of the local Council of Monufia

Answer: All pipelines of the national gas grid are linked to the SCADA system which enable us to instantaneously detect any leakage and at the same time the system enables us to remote control the valves isolating all the units and connection which have leakage .We have plans for periodic patrolling and maintaining the pipelines . We also have proactive tools namely the latest technologies of the intelligent pig whereby the thickness and the inner diameter of the pipeline is measured to detect any faults or defects before the occurrence of any incidents.

Seventh question :

Will the project provide work opportunities for residents of Sadat City?

Answer: Sure, there will be work opportunity and residents will be hired specially during the construction phase.

The invitation made for the public consultation session with a translation of it is made

after



جاسكو

يتشرف السيد المهندس رئيس مجلس الإدارة
والعضو المنتدب بدعوة سيادتكم للمشاركة
في الإجتماع الخاص بتقييم الأثر البيئي
لمشروع خط النوبارية/السادات
وذلك يوم الأحد الموافق 13 ديسمبر 2009م في تمام الساعة العاشرة صباحاً
بقاعة جهاز مدينة السادات - محافظة المنوفية

El Nubaria El Sadat Gas Pipeline

Environmental Impact Assessment



9.0 public consultation

دراسة تقييم الأثر البيئي منشورة على موقع الشركة: www.gasco.com.eg/hse.htm



جاسكو

Invitation

On behalf of GASCO, Mr. Chairman and Managing Director is pleased to invite you to attend and participate in the Public Consultation Session concerning the Environmental Impact Assessment for the El Nubaria El Sadat onshore Gas Pipeline Project

On sunday December 13rd, 2009 at 10:00 am at the meeting hall of Al-Sadat city authority – El Monofia governorate.

www.gasco.com.eg/hse.htm

9.0 public consultation

Agenda of the Public Consultation meeting for the EIA of El Nubaria El Sadat Project

- 10:00 Registration
- 10:30 Safety Induction
- 10:33 Introduction of GASCO Mr. Chairman and
Managing Director
- 10:45 Introduction of the Governor of El
Monofia.
- 11:00 Presentation of GASCO HSE General Manager
- 11:15 Tea Break
- 11:30 Presentation for the Project stages
- 11:45 Presentation for the project EIA
- 12:00 Open Discussion
- 12:15 Recommendations
- 1:00 Invitation for dinner

El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



9.0 public consultation

Photos of the public consultation



The public consultation meeting on the environmental impact assessment (EIA) of Nubaria/AI-Sadat /AI-Fayyounm gas pipeline project (Monufia governorate) in the presence and under the auspices of H.E. Major general/ Samy Emira ,Governor of Monufia , Eng . Hasan Al-Mahdy , Gasco Chairman and Managing Director and representatives of the local community of Sadat city and Monufia governorate.

El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



9.0 public consultation



El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



9.0 public consultation



Chemist / Mostafa AboAlmakrem GASCO HSE general manager address to the meeting on GASCO strategy in project implementation .

El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



9.0 public consultation



Dr. chemist / Mohamed Fathy Tash presenting EIA OF the Project



El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



9.0 public consultation

Representative of EEAA (headquarters and Menufia branch)



Representatives of the EIB AND EGAS

El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



9.0 public consultation

Attendees representing local communities and NGO societies posing questions and inquires during the meeting .

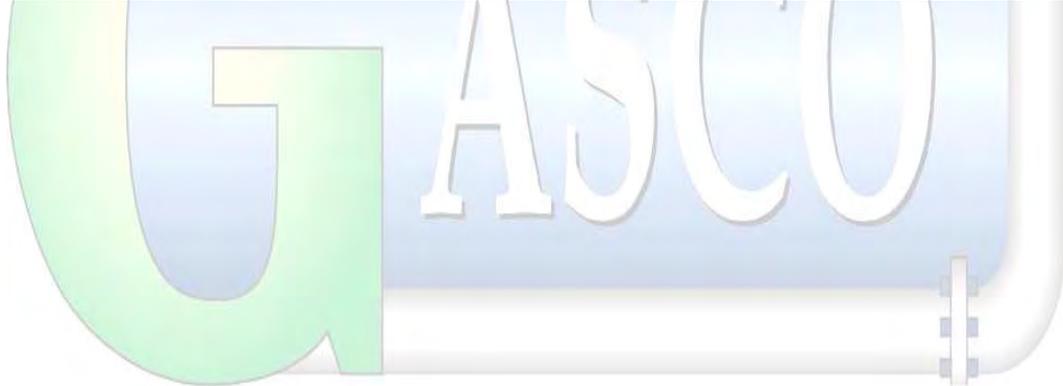


El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



9.0 public consultation

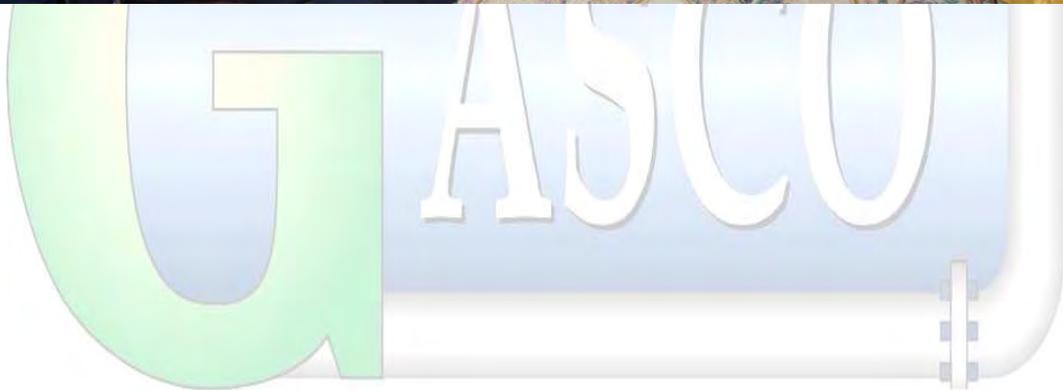


El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



9.0 public consultation



El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



9.0 public consultation



El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



9.0 public consultation



El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



9.0 public consultation



List of the attendants

Ser.	Names	Address/ Job	Tel
1	Marwa El Sayed	E conserv	0124814272
2	Amira El Ameer	E gas	0127904178
3	Nermine Nabil	E gas	0108554009
4	Reham Mahrous	E gas	0144411600
5	Maddah Olwany	EL Sadat	0121793724
6	Alaa Masoud	Member of the Board of Trustees of El Sadat	0105720465
7	Amany Salah El Saeed	EEAA	0101948860
8	Ameera Abd el Hakeem	EEAA	0123874929
9	Eng. Ahmed Abd El Hameed	-	0121632499
10	Ahmed hossam Abd El Salam	GASCO	0106072921
11	Dr. Eng./ Mohamed Malah	El mostasmereen district	0122109104
12	Dina Ahmed Abu Taleb	Jornalist in El Esbou' Journal	0108245013
13	Abd El Wahab Abd El Nabi	Alderman of El Fayoum gavornorate	0186448665
14	Nasr Mohamed Khedr	Secretary of the Treasury Unit of El Sadat	0101109163

El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



9.0 public consultation

15	Ahmed Abd El Motaleb Shahin	Secretary of the Treasury Unit of El Sadat	0123723785
16	Eissa Ibrahim Zidane	19 Amer st.,	0111177199
17	Abd El Mone'm Abd El wahed		0181805085
18	Eid Mohamed Mohamed Hegazy	Deputy Director of the environment El sadat city	04812600021
19	Maher Mustafa Fahmy	EEAA in El Sadat	04812600022
20	Yasser Mohamed Abd El Meguid	EEAA in El Sadat	04812600022
21	Samy Mohamed El Mosnad	governorate Alderman	0106870894
22	Shawky Ezzat Othman	Treasurer of El Monofia govnrnorate	0183801595
23	Abd El Kader Ibrahim Soliman		0101069382
24	Abd El Fatah Ali Arab	Regional Federation of Associations	0482221198
25	Samy Helal	Regional Federation of Associations	0482221198
26	Sameh Mohamed Samy Ibrahim	Egypt Gas Ass. Gen. Mgr.	0101757814
27	Dr. Fouad Nabawy	El Sadat Clinic General Manager	0106833240
28	Osama Mohamed	Regional Federation of Associations	0126416924
29	Hala Hassam Abd Allah	New Urban Communities Authority	0101693121
30	Mohamed El Esawy	Jornalist	0103849648
31	Essam Gerges	Jornalist of El bagour	0169291216
32	Mohamed El Sayed	Member of the local conservation	0121566696
33	Moahmed saad Khedr	Member of the local conservation	0121800879
34	El Sayed mohamed	Member of the local conservation	0107073027
35	Sameer Ahmed Abd El Aleem	Member of the local conservation	0128824058
36	Eng. El Sayed Salem Ali	Consultant engineer of El monofia governorate	0100760506
37	Talaat Morsi El Saadany	Regional Federation of Associations	0102301067
38	Abu el Magd Abd el Meguid	Regional Federation of Associations	0165336310
39	Mohamed Nessim Mahmoud	Regional Federation of Associations	0105584284
40	Ahmad ragab Ga'far	Director of the environment adminstartion El sadat city	0163327692
41	Mohamed El Sayed Hussein	Secretary of El Sadat city	0128714111
42	Dr. Mustafa El Sayed	El Sadat Manager	0100991191
43	Gamal Oeiss	driver President of the local council	0106072158
44	Ayman Mokhtar Hassan El Hafnawy	Regional Federation of Associations	0107656469
45	Hanaa Nabil Saied El Nahas	Jornalist	0106949251
46	Mamadouh Abd El Satar	Local Council	0105756166
47	Hussein Mobarak	Local Council	0122158800
48	General. Ali Mohamed	Undersecretary of the Ministry of Social Solidarity	0106572675
49	Bassam Abu Hadeed	El Monofeya& El Sadat Journal	0142092936
50	Ehab Ramadan	Citizen of El sadat city	0111117247
51	Mohamed Ibrahim Elsayed	Citizen of El sadat city	0122469146

El Noubaria El Sadat Gas Pipeline

Environmental Impact Assessment



9.0 public consultation

52	Mr. Salah Ammar	Governor Gen. Secretary	0106206632
53	Eng. Ayman Abd El Kader Mahmoud	Chairman of drinking water and sanitation of El Monofia governorate	01014131314
54	General. Ibrahim Khaleel	Governor office	-
55	Ali Ahmad Mahgoub	Citizen of El sadat city	0117075757
56	Sarhan Abd Raboh	Renaissance Society	0180023112
57	Mahrous Abd El Aziz Khattab	Regional Federation of Associations	2752519
58	Ossama EL Malah	Journalist in Middle East News	0185282000
59	Emara Mohamed Emarah	Citizen of El sadat city	-
60	Hanafi Mahmoud Zidane	Citizen of El sadat city	0112001789
61	Salah Hassan Shamandy	Citizen of El sadat city	-
62	Ossama Mohamed Kamal	Accountant	0106202006
63	Baheega Abd El fatah Hamam	Lawyer	0105291091
64	Khaled Mohamed	T.V.	-
65	Hend Ibrahim	Egypt Today newspaper	0187953913
66	Amr Mohamed Olwany	Governmental gen. manager	0170095542
67	Mahrous El No'many	photographer	0108668842
68	Alia kadry	Regional Federation of Associations	0123732902 2515000
69	Chem. Hazem Mohamed fahmy	GASCO HSE Assistant General manager	0106072225
70	Dr. Chem. Mohamed Fathy	GASCO HSE Section Head	0106072803
71	Eng. Ahmed Galal	GASCO HSE Section Head	0122156328
72	Chem. Ahmad Soliman	GASCO Environmental Studies Specialist	0165516080

**Under the auspices of H.E Major general/Samy Emira
Governor of monufia**

Invitation

Gasco Chairman and Managing Director
Has the honor and pleasure to invite you to

**The public consultation meeting on the environmental impact assessment
Of Nubaria/Al-Sadat/Al-Fayyounm gas pipe line project
(Monufia governorate)**

On Sunday the 13 of December at 10.00 am

At the meeting hall of Al-Sadat city authority

For further information on the subject of the meeting please visit our website:
www.gasco.com/hse.htm

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

The Egyptian Natural Gas Company
GASCO

HSE Management System Manual
دليل نظام إدارة السلامة والصحة المهنية والبيئة

Issue #	Item #	Date	Preparation by	Reviewed by	Approved by GASCO HSE General Manager
0	All	06/01/05	GASCO HSE team		
1	All	01/02/05	GASCO HSE team		
2	All	15/04/05	GASCO HSE team		
3	All	01/05/06	GASCO HSE team		
4	All	14/12/2008	GASCO HSE team		

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	1	92

 Egyptian Natural Gas Co. الشركة المصرية للغازات الطبيعية	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

Table of contents

<u>Section</u>	<u>Page</u>	<u>Subject</u>	<u>ISO 14001</u> <u>clause</u>	<u>OHSAS</u> <u>18001 clause</u>
1-1		About this manual		
		Manual approval		
		Manual control		
1-2		About GASCO		
		Processes & activities of WDGC		
		Processes & activities of LPG		
		Processes & activities of Cairo area		
		Processes & activities of Alex area		
		Processes & activities of Delta area		
		Processes & activities of Canal & Sinai area		
		Processes & activities of Gulf of Suez area		
		Processes & activities of Industrial area		
		Manpower		
		Contact guide		
		Key Persons		
		ISO 14001 Certification		
		OHSAS 18001 Certification		
2		GASCO HSE Policy	4.2	4.2
3		Planning	4.3	4.3
3-1A		Environmental Aspects	4.3.1	
3-1B		Hazard identification, risk assessment & risk control		4.3.1
3-2		Legal & Other requirement	4.3.2	4.3.2
3-3		Objectives & Targets	4.3.3	4.3.3
3-4		HSE management programs	4.3.3	4.3.4
4		Implementation & Operation	4.4	4.4
4-1		Structure & Responsibility	4.4.1	4.4.1
4-2		Training, awareness & competence	4.4.2	4.4.2
4-3		Communication & Consultation	4.4.3	4.4.3
4-4		HSE Management System documentation	4.4.4	4.4.4
4-5		Document control	4.4.5	4.4.5
4-6		Operation control	4.4.6	4.4.6
4-7		Emergency preparedness & response	4.4.7	4.4.7
5		Checking & Corrective Action	4.5	4.5
5-1		Monitoring & measurement	4.5.1	4.5.1
5-2A		Nonconformance, corrective & preventive action	4.5.2	
5-2B		Accident & Incident investigation		4.5.2
5-3		Records	4.5.3	4.5.3
5-4		HSE Management System audit	4.5.4	4.5.4
6		Management Review	4.6	4.6
7		Waste Management System		
8		Contractor Safety		

Annexes

1	HSE Procedure List	قائمة إجراءات نظام إدارة السلامة والصحة المهنية والبيئة
2	HSE MANAGEMENT SYSTEM Responsibility Matrix	مصفوفة مسؤوليات نظام إدارة السلامة والصحة المهنية والبيئة

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	2	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

1-1 About This Manual

This is GASCO's HSE Manual "GASCO-HSE-M." It covers the GASCO's HSE policy, objectives and targets in conformance with the requirements of the international standards ISO 14001, OHSAS 18001 and refers to the HSE related procedures that support the implementation of HSE Management System (HSHSE MANAGEMENT SYSTEM).

GASCO has prepared and implemented an HSE Management System, which ensures that the occupational health, safety & environmental effects of its activities conform to the stated HSE policy and associated objectives and targets.

The objectives of the HSE Management System are to meet the requirements of the GASCO HSE policy, health, safety and environment matters, and all of the related regulations.

This system is fully documented in accordance with ISO 14001 & OHSAS 18001 and is supported with documented procedures at all levels.

The manual comprises an attached HSE procedures index list

(See annex # 1).

Manual Approval

TOP MANAGEMENT REPRESENTATIVE

(APPOINTEE)

Chem. Mustafa Abu El_Makarem

Manual Control

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	3	92

1-1 نبذة عن هذا الدليل:

يعتبر هذا الدليل (الكتيب الإرشادي) للسلامة والصحة المهنية والبيئة للشركة المصرية للغازات الطبيعية (جاسكو) ، والذي يغطي سياسة وأهداف السلامة والصحة المهنية والبيئة لشركة جاسكو متطابقاً مع متطلبات الاكواد العالمية (الايزو 14001 و الـ OHSAS 18001) كما أنه يشير إلى الوسائل التطبيقية المستخدمة والمتعلقة بالسلامة والصحة المهنية والبيئة والتي ساهمت ودعمت في تطبيق نظام إدارة السلامة والصحة المهنية والبيئة بالشركة.

قامت جاسكو بإعداد وتطبيق نظام ادارة السلامة والصحة المهنية والبيئة وهو الشيء الذي يؤكد على أن التأثيرات على السلامة والصحة المهنية والبيئة والنتيجة عن نشاطات الشركة متطابقة ومصاحبة لسياسة وأهداف السلامة والصحة المهنية والبيئة للشركة.

إن أهداف نظام ادارة السمة والصحة المهنية والبيئة بالشركة تهدف الى التأكد من التوافق مع متطلبات سياسة السلامة والصحة المهنية والبيئة والتوافق مع الامور المتعلقة بالسلامة والصحة المهنية والبيئة والتوافق مع القواعد الموضوعه بهذا الخصوص. إن نظام السلامة والصحة المهنية والبيئة قد تم توثيقه كاملاً طبقاً ومتطلبات الايزو 14001 و الـ OHSAS 18001 وتم تدعيمه بالوسائل التطبيقية الموثقة على جميع المستويات.

مرفق مع هذا الدليل فهرس بالطرق التطبيقي المستخدمة والمتعلقة لاسلامة والصحة المهنية والبيئة (انظر الملحق 1)

الموافقة على الدليل

ممثل الادارة العليا

السيد ك/ مصطفى أبو المكارم

 <p>Egyptian Natural Gas Co. الشركة المصرية للغازات الطبيعية</p>	<p>HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة</p>	<p>GASCO-HSE-M</p>
<p>HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة</p>		

- HSE General Department is responsible for HSE Manual Preparation and it's periodical revisions. These revisions are once a year at least.
- Management Representatives approve the HSE Manual before issue and any amendments before execution.
- Document Controllers of HSE General Department maintain the original of this manual. Other manual copies are distributed to holders according to Document Distribution List.
- Any addition, deletion or amendment of to this manual and any information in it is performed as per "Document control" procedure # GASCO-HSE-P-006. The amended page(s) is referenced with the same revision number.
- This manual is to be reissued if the amendments and / or changes affect more than 20% of its contents.

1-2 About GASCO Background

GASCO is the Egyptian natural gas company, one of Egyptian natural gas holding (EGAS) companies, GASCO working in the field of gas processing, transportation, and distribution.

GASCO was established in March 17, 1997 in accordance with the investment law number 230 of year 1989 amended by law number 8 of year 1997.

GASCO Mission:

GASCO has a clear mission focused on using the

التحكم في الدليل

- إن الإدارة العامة للسلامة والصحة المهنية وحماية البيئة هي المنسؤلة عن الاعداد والمراجعة الدورية (مرة كل عام على الاقل) لهذا الدليل.
- ممثل الادارة العليا هو المسئول عن الموافقة على دليل السلامة والصحة المهنية والبيئة مثل اصداره أو اجراء التعديل به.
- الشخص المسئول عن التحكم في الوثائق بلادارة العامة للسلامة والصحة المهنية وحماية البيئة بالمركز الرئيسي مسئول عن الاحتفاظ بالنسخة الاصلية من الدليل ويتم توزيع نسخ من هذا الدليل على المستخدمين طبقاً ولائحة توزيع الوثائق.
- أي اضافة ,إلغاء أو تعديل لهذا الدليل أو أي معلومات بخصوصه توجد بالوسائل التطبيقية للتحكم في الوثائق رقم GASCO-HSE-P-06 بالنسبة للصفحات المتعلقة بالتعديل يتم اعطاؤها نفس رقم المراجعة.
- يتم اعادة اصدار هذا الدليل في حالة لو أن التعديلات والتغيرات عليه زادت عن 20% من المحتويات.

2-1 نبذة عن الشركة المصرية للغازات الطبيعية (جاسكو)

الشركة المصرية للغازات الطبيعية (جاسكو) هي أحد شركات الشركة المصرية القابضة للغازات الطبيعية (EGAS). تعمل جاسكو في مجال معالجة ونقل وتوزيع الغاز الطبيعي.

أسست جاسكو 17 مارس 1997 طبقاً وقانون الاستثمار رقم 230 لسنة 1989 والذي تم تعديله بالقانون رقم 8 لسنة 1997.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	4	92

 <p>Egyptian Natural Gas Co. الشركة المصرية للغازات الطبيعية</p>	<p>HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة</p>	<p>GASCO-HSE-M</p>
<p>HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة</p>		

state of art technology in the:

- Construction, operation, management, and maintenance of the national gas grid
- Maximizing gas processing, and extraction of gas valuable components for domestic use and export.

GASCO Vision:

GASCO has a vision focused on taking the lead in the field of natural gas transportation, distribution, processing, export, marketing to be on equal footing with international counter part.

GASCO consists of the following gas plants / areas:-

- Western desert gas complex
- Amerya LPG plant.
- Canal & Sinai area.
- Delta area
- Gulf of Suez area
- Alex. Area
- Cairo area
- Industrial areas.

Responsibility of GASCO

1- For its employees:-

To provide its employees with good and safe conditions of work and competitive terms and conditions of service. To promote the development and best use of human talent and to encourage the involvement of employees in the planning and direction of their work through team work.

It is recognized that our success in the application of these principles within GASCO depends on full commitment of all employees.

2- For society

To conduct business and national projects as a

مهمة جاسكو:

- تتركز مهمة جاسكو على استخدام التكنولوجيا الحديثة المتاحة في:
- انشاء, تشغيل, إدارة وصيانة الشبكة القومية للغازات الطبيعية
- تعظيم الفائدة من معالجة وفصل مكونات الغاز للاستخدام المحلي والتصدير الخارجي.

رؤية جاسكو:

تتركز رؤية جاسكو على أن يكون دائماً لها السبق في مجال نقل وتوزيع ومعالجة وتصدير وتسويق الغاز لتكون على قدم وساق مع الشركات العالمية العاملة في نفس المجال.

مناطق ومصانع الشركة المصرية للغازات الطبيعية (جاسكو):

- مجمع غازات الصحراء الغربية
- مصنع بوتاجاز العامرية
- منطقة القناة وسيناء
- منطقة الدلتا
- منطقة الخليج
- منطقة الاسكندرية
- منطقة القاهرة
- المناطق الصناعية

مسئولية جاسكو:

1. اتجاه العاملين:

- توفير جو عمل آمن للعاملين مع مستوى عالي من الخدمات.
- توفير الاستخدام الامثل للامكانيات البشرية وتشجيع مشاركة العاملين في تخطيط وادارة أعمالهم من خلال فرق العمل.
- يجب أن ندرك أن نجاحنا في تطبيق هذه المبادئ داخل جاسكو يعتمد على الالتزام الكامل من جميع العاملين

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	5	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

responsible corporate member of the society which is assigned responsibility by the ministry of petroleum and EGAS to manage and maximize the use of natural gas observing the laws of the country, to respect fundamental human rights and to give proper regard to HSE and their relevant laws consistent with its commitment to contribute to sustainable development.

GASCO's Principles of HSE

Consistent with its commitment to contribute to sustainable development and create safe work environment, GASCO has a systematic approach to HSE management through which it seeks to achieve continuous improvement in performance. Due to the fact that HSE is crucial to the risky and hazardous nature of the gas business, GASCO manages these matters as any other critical business activity, sets targets for improvement and measures compliance through self- inspection, audits and other tools, appraises and reports its performance.

2. اتجاه المجتمع

عن طريق توصيل المشاريع القومية لتصبح جاسكو في نسيج واحد مع المجتمع. مسئولية هذه المشاريع أُلقت على عاتق جاسكو وكلفت بها من وزارة البترول و EGAS لإدارة وتعظيم الاستفادة من الغاز الطبيعي، أخذين في الاعتبار قوانين الدولة وحقوق الأفراد واحترام القوانين المتعلقة بالسلامة والصحة المهنية والبيئة ومتماشياً مع التزامنا بالمشاركة في التنمية المستدامة.

مبادئ السلامة والصحة المهنية وحماية البيئة لجاسكو

تماشياً مع التزام جاسكو بالمشاركة والمساهمة في التنمية المستدامة وإنشاء جو عمل آمن، قامت جاسكو بوضع أسلوب منظم لإدارة السلامة والصحة المهنية وحماية البيئة تسعى من خلاله لتحقيق التحسين المستمر ورفع الكفاءة.

وعملًا بالحقيقة بأن السلامة والصحة المهنية وحماية البيئة يقع عليها المسؤولية الكبرى في التعامل مع مخاطر صناعة الغاز، قامت جاسكو بإدارة هذه الأمور كما هو الحال في الصناعات والأنشطة الحساسة وذلك من خلال وضع أهداف للتحسين المستمر وقياس التوافق مع هذه الأهداف من خلال التفتيش الذاتي والمراجعة والوسائل الأخرى التي تظهر وتسجل الأداء.

Western Desert Gas Complex

WDGC mission as defined

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	6	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

Using the most update worldwide technologies in production of the most economic components from the Western Desert Gas field to produce Ethane / propane C2/C3 mix as a feed stock to petrochemical, propane for export and LPG & condensate for local market

WDGC vision as defined

To classify the complex as a pioneer plant in the field of gas processing to be capable of competing with other international gas NGL plants

Processes and Activities

The main process of WDGC is to processed of 550MMSCFD gas from western desert gas fields (Obayied, Salam, Tarek) to produce:

- 1) 470 M Tons/year of C2C3
- 2) 250 M Tons/year of commercial propane
- 3) 250 M Tons/year of LPG
- 4) 300 M Bbls /year of condensate

These products equal 80 MMSCFD shrinkage natural gas & the residual gas 470 MMSCFD are injected to the natural gas network; meanwhile, a group of correlated processes and activities takes place.

Processes and activities that are handled in WDGC could be described as the following:

1- Gas Processing

- The Western Desert Gas Complex receives two feed gases - from "EL-Obayed Field" from Badr EL-DIN Co. & "EL-Salam, Tarek and UM Baraka Fields" from Khalda Petroleum Co. – in the early start region.

- The feed gas (@ 27 oC in summer or 14 oC in winter) provides into two dehydration package to remove water in order to avoid the formation of solid products (i.e. hydrates), Molecular sieve in

مجمع غازات الصحراء الغربية

الغرض :

إنتاج واستخلاص المكونات الاقتصادية المتوفرة في الغاز الطبيعي عن طريق استخدام أحدث التكنولوجيا العالمية ، حيث يتم استخلاص منتج خليط الايثان / البروبان لاستخدامه في صناعة البتروكيماويات ويتم استخلاص منتج البروبان للتصدير ومنتجات البوتاجاز والمتكثفات للاستهلاك المحلي 0

الهدف :

تصنيف مجمع غازات الصحراء الغربية كمصنع متميز في مجال إنتاج الغاز قادرا على المنافسة العالمية في نفس المجال.

العمليات والنشاطات:

يقوم المجمع بمعالجة وفصل 550 مليون قدم مكعب / يوم من حقول غاز الصحراء الغربية (الأبيض، سلام، طارق وأم بركة) لتنتج:

1	-	470	ألف طن / عام من خليط الايثان / البروبان	0
2		250	/	0
3		250	/	0
4		300	/	.

تمثل هذه المنتجات حوالي 80 مليون قدم مكعب/ يوم (حوالي 15 %) من إجمالي الغاز المستلم من الحقول ، أما باقي الغاز (470 مليون قدم مكعب يتم تحويلهم على الشبكة القومية للغاز الطبيعي ، وتتم العمليات على النسبة المستخدمة في الإنتاج كما يلي :-

1- معالجة الغاز:

يتم استلام الغاز المغذى للمجمع من حقول شركة بدر الدين (حقول الابيض) ، وحقول شركة خالدة للبتترول (حقول السلام، طارق، أم بركة) في منطقة دخول الغاز بالمجمع.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	7	92

dehydration unit that equipped with two trains A&B three vertical bed each, compressor, heater, and air cooler dried the feed gas 550 MMSCFD.

- After dehydration the spilted feed gas processed into two parallel processing trains of equal capacity. Each train consists of cooling exchangers, low temperature separators (LTS), expanders, and demethanizer tower to separate methane products

- For further processing in a single deethanizer, gas plant and compression station, after the split the gas is cooled by exchange with the demethanizer overhead gas and then further cooled in the demethanizer recoiled and final exchange with demethanizer overhead gas, after cooling the mixed phase is let down over a pressure control valve to the low temperature separator (LTS) operating pressure and sent to the LTS, the vapor phase is sent to the expander before entering the demethanizer the liquid phase is depressurized and injected into the demethanizer, The demethanizer separates methane from C2 and heavier. It is re-boiled by exchange with the feed gas. As the demethanizer bottom is used as cold side fluid in the deethanizer overhead condenser 10 minutes of hold-up are provided to allow continuous operation of the deethanizer in case of process upsets in the upstream plant. A separate drum as the required hold-up volume provides as a consequence liquid hold-up in each demethanizer if contained in the demethanizer tower itself would lead to an excessively large tower.

Demethanizer bottom's product from each train are the deethanizer overhead condensers , a separate drum as the required hold-up volume after heat exchange is first compressed in the deethanizer provides the demethanizer overhead vapor if contained in the

- يتم استلام الغاز من الحقول عند درجة حرارة 27° م في فصل الصيف و 14° م في فصل الشتاء ، يتم تقسيم الغاز المغذى للمجمع إلي جزئيين متساويين ، حيث يتم نزع المياه في منطقة فصل المياه التي تتكون من وحدتين فصل مياه متشابهتين ، كلا منهما تحتوى على فلتر غاز وكذلك عدد (3) وحدات مناخل جزئية لتجفيف الغاز من المياه.

- يتم تجميع الغاز بعد انتهاء عملية التجفيف حيث يتم تبريد الغاز في وحدتي تبريد متساويين في السعة كلا منهما يحتوى على مجموعة مبادلات حرارية ، و فاصل بدرجة حرارة منخفضة (LTS) ، وحدتي ممدد تربييني وبرج تقطير لنزع الميثان ، حيث يتم التبريد في مجموعة المبادلات الحرارية أولا ثم تبرد بواسطة بلوف تبريد ، ثم الممدد التربييني ، حتى يتم تكثيف الغاز إلي سائل ثم يتم تقطيره مرة أخرى داخل البرج ويتم صعود الغاز المباع إلي أعلى البرج ويتم ضغطه إلي الشبكة القومية ، أما باقي المشتقات (C2+) يتم تكثيفها في قاعدة البرج 0

- يتم تجميع السائل المتبقي في قاعدة برج فصل الميثان في كلا من الوجدتين وإدخاله على وحده فصل السائل والغاز ثم يتم إدخال السائل في برج نازع الايثان وضغط الغاز لتكثيفه إلي سائل وضغطه إلي برج نازع الايثان أيضا ، حيث يتم فصل منتج الايثان / البروبان من أعلى البرج وتدفيعه إلي شركة سيدي كرير للبتروكيماويات ويتم تكثيف باقي المشتقات (C3+) في قاعدة البرج ، ويتم إدخال السائل المتبقي في قاعدة برج نازع الايثان إلي برج فصل البروبان حيث يتم تسخينه لتقطير منتج البروبان الذي يتم استلامه من أعلى البرج وتخزينه في المستودعات الكروية ويتم تكثيف باقي المشتقات (C4+) في قاعدة البرج ويتم إدخال السائل المتبقي في قاعدة برج فصل البروبان على برج فصل البيوتات ويتم تسخينه لتقطير منتج البوتاجاز الذي يتم استلامه من أعلى البرج ويخزن في المستودعات الكروية ويتم تكثيف باقي المشتقات (C5+) في قاعدة البرج والتي يتم تخزينها في المستودعات الاسطوانيه وتسلم بعد ذلك لشركة أنابيب البترول.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	8	92



HSE Management System

نظام إدارة السلامة والصحة المهنية والبيئة

GASCO-HSE-M

HSE Management System Manual

دليل نظام إدارة السلامة والصحة المهنية والبيئة

demethanizer tower. Demethanizer bottoms from each train are combined and after depressurizing and used as cold side fluid in the deethanizer overhead condenser , the demethanizer overhead vapor after heat exchange is first compressed by the recompressor linked with the expander, then sent to the final compression packages , a fter heat exchange in the deethanizer condenser the demethanizer bottom's product is transferred to the deethanizer feed separator and separated to gas & liquid phases, & then fed to the deethanizer via the deethanizer feed pump and deethanizer compressor , the de-ethanizer tower is designed to recover C2/C3 from C3 and heavier. The overhead vapor is condensed by heat exchange with the demethanizer bottom's product.

•The de-ethanizer bottom's product is re-boiled by direct fired heater , & sent to the depropanizer tower for further processing , the depropanizer separates propane from C4 and heavier. The distillate liquid product is commercial propane sent to battery limit and storage after cooling, then the depropanizer bottom's product heated & sent to the de-butanizer for further processing.

•The de-butanizer is used to separate LPG, a mixture of C3 and C4, from the C5 & heavier components in the feed. The LPG is sent to battery limit and storage after cooling. The Debutanizer bottom's product, stabilized condensate (C5 & C5+), is sent after cooling to battery limit and storage.

2- Administrative Activities:

Administrative works take place in most of WDGC departmental activities to plan and follow up site activities. Inputs and outputs of such work are data and /or specifications recorded on hard copies of paper or on electronic media.

• يتم تجميع السائل المتبقي في قاعدة برج فصل الميثان في كلا من الوجدتين وإدخاله على وحده فصل السائل والغاز ثم يتم إدخال السائل في برج نازع الايثان وضغط الغاز لتكثيفه إلي سائل وضغطه عن طريق ضاغط ترددى , ثم يتم إدخاله إلى برج نازع الإيثان أيضا , حيث يتم فصل منتج الايثان / البروبان من أعلى البرج وتدفعه إلي شركة سيدي كرير للبتر وكيمائيات ويتم تكثيف باقي المشتقات (C3+) في قاعدة البرج 0

• يتم إدخال السائل المتبقي في قاعدة برج فصل البروبان على برج فصل البيوتات ويتم تسخينه لتقطير منتج البوتاجاز الذي يتم استلامه من أعلى البرج ويخزن في المستودعات الكروية ويتم تكثيف باقي المشتقات (C5+) في قاعدة البرج والتي يتم تخزينها في المستودعات الاسطوانيه.

• يتم إدخال السائل المتبقي في قاعدة برج فصل البروبان على برج فصل البيوتات ويتم تسخينه لتقطير منتج البوتاجاز الذي يتم استلامه من أعلى البرج ويخزن في المستودعات الكروية ويتم تكثيف باقي المشتقات (C5+) في قاعدة البرج والتي يتم تخزينها في المستودعات الاسطوانيه.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	9	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

3- Material storage process:

Adequate storage areas are provided for each type of material / product. Stores for facilities, spare parts, materials, lube oil are available.

4- Workshops & maintenance:

A general service workshop is available to provide maintenance and repair services of facilities and equipment.

According to MAXIMO, General Maintenance Division has a preventive maintenance program for mechanical equipment, electrical equipment, instruments, and turbines.

5- Contracted operations:

Some activities and operations of WDGC are completely achieved by contractors, through agreement protocols, such as construction, catering, and house keeping. And fuel supply works. Those contractors are working in WDGC sites and have their assigned areas of work

6- Transportation operations:

WDGC has about 8 mobile vehicles for staff and material transportation purposes, and one fire truck.

2- النشاطات الإدارية:

تقوم جميع الإدارات بوضع خطط لمتابعة العمليات الموجودة في مكان العمل ويتم حفظ البيانات والمعلومات في صورة ملفات ورقية أو نسخ إلكترونية 0

3- عمليات التخزين

يوجد أماكن مخصصة للتخزين حيث يتم تخزين المواد وقطع الغيار وزيت التشحيم في المخزن المخصص لذلك ويتم تخزين المنتجات في منطقة التخزين المعدة لذلك 0

4- الورشة والصيانة:

يوجد ورشة عامة للمجمع لصيانة الأجهزة والمعدات طبقا وبرنامج الصيانة (MAXIMO) الذي يشمل جميع المعدات الميكانيكية والكهربائية والأجهزة وكذلك التربينات الغازية 0

5- أعمال بواسطة المقاولين:

هناك بعض العمليات يتم إسنادها بالكامل إلي بعض المقاولين عن طريق عقود مبرمة معهم مثل الإنشاءات والنظافة والإمداد بالكهرباء والمياه ولكل مقاول المكان المخصص له داخل المجمع إذا تتطلب الأمر 0

6- أعمال النقل:

يوجد بالمجمع حوالي 17 سيارة لنقل العاملين والمواد وكذلك توجد سيارة للإطفاء

II- Amerya LPG Recovery Plant

LPG mission as defined

Using the most update worldwide technologies in production of the most economic components from western desert gases. And the treated lean gas will be delivered to Dkheila iron and steel company and national grid customers.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	10	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

LPG vision as defined

To classify the complex as a pioneer plant in the field of gas processing to be capable of competing with other international gas NGL plants.

Processes and Activities

The main process of LPG is to processed of 300 MMSCFD gas from western desert gas fields (BED-3, Abu-Sanan)

1- Gas Processing

- Amerya Plant - an \$ 99 MM capital investment project is one of the Egyptian General Petroleum Corporation (EGPC) Recovery plants, designed to recover LPG and Condensate from Western Desert gases. The plant is located twenty kilometers to the west of Alexandria by Alexandria - Cairo Desert Road. The plant started production in November 1995, supervised and operated by Western Desert Operation Petroleum Company (WEPCO).

- The feed gas to the plant is partially dehydrated natural gas coming from two existing Condensate recovery plants; namely Abu-Sannan and Bader El-deian Bed-3 Plants.

The plant is designed to handle 300 million standard cubic feet per day (MMSCFD) of feed gas and to recover a minimum of 90% of the feed gas butanes as LPG, nowadays the feed gas reached 340 MMSCFD due to the increasing demand for natural gas and LPG.

ثانيا : مصنع استخلاص البوتاجاز بالعامرية

تعريف مهام مصنع استخلاص البوتاجاز بالعامرية
 يستخدم مصنع استخلاص البوتاجاز بالعامرية أحدث الوسائل التكنولوجية لاستخلاص أفضل المكونات من غازات حقول الصحراء الغربية. بينما يقوم مصنع استخلاص البوتاجاز بالعامرية بإرسال الغاز الفقير بعد معالجته الي شركة الدخيلة للحديد والصلب ومستهلكي الشبكة القومية .

تعريف المنظور الخاص بمصنع استخلاص البوتاجاز بالعامرية :

يصنف مصنع استخلاص البوتاجاز بالعامرية كأحد المصانع الرائدة في مجال معالجة الغاز لكي يكون قادر علي المنافسة مع المصانع العالمية العاملة في هذا المجال.

العمليات والنشاطات:

استخلاص البوتاجاز بالعامرية هي معالجة 300 مليون قدم مكعب يوميا من الغاز الطبيعي القادم من حقول بدر -3 وأبو سنان بالصحراء الغربية.

1- معالجة الغاز :

إنشاء مصنع استخلاص البوتاجاز بالعامرية باستثمار رأسمالي قدره 99 مليون دولار ويعتبر واحد من مصانع الاستخلاص التابعة للهيئة المصرية العامة للبتروول. وقد صمم المصنع لاسترجاع البوتاجاز والمنتجات من الغاز الطبيعي. ويقع مصنع استخلاص البوتاجاز بالعامرية 20 كيلو غرب الإسكندرية علي طريق الإسكندرية القاهرة الصحراوي. وقد بدأ تشغيل المصنع في نوفمبر 1995 بإشراف وتشغيل شركة ويكو.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	11	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

- In general feed gas is classified either rich or lean gas based on their content of Butane fraction. Rich feed gas is designated to a mixture of 270 MMSCFD from BED-3 and 30 MMSCFD from Abu-Sannan and lean feed gas is designated to 300 MMSCFD received from BED-3. The Plant produces LPG, Condensate, specially conditioned Lean Natural Gas to Dekheila Iron and Steel Company, fuel gas for the plant itself and for Amerya Petroleum Refinery Company and finally sales gas to National Grid consumers.
 - The plant plays an important part in the national economy as it increases the economic value and revenues of the promising reserve of natural gas. From Egypt Energy Demand and Supply chart we can see that the plant existence decreases the gap between the Egyptian national production of LPG and the increasing demand for it, that results in saving of hard currency budgeted for the importation of the shortage quantity of LPG consumed by different industrial activities in the country. It should be noted that the plant share of LPG production to the total national primary energy production, is 15% according to 1997 / 1998 statistics and the plant share to the total national production of LPG is 10% according to the same year statistics.
 - The plant is comprised of many processing units like Dehydration package, Chilling package, Refrigeration package, Extraction package, and Storage package. These packages are briefly discussed in the following description.
- Dehydration Package**
- Untreated feed gas (contains water and oil) with up to 90 ppm of H₂O, is dehydrated in the Molecular

يعتبر غاز التغذية للمصنع خالي جزئياً من المياه حيث انه قادم من مصنعي أبو سنان وبدر 3 لاسترجاع المتكثفات , وقد صمم المصنع لتداول 300 مليون قدم مكعب من الغاز لطبيعي يومياً ولمعالجة بحد ادني 90 % من البيوتان كغاز بترولي مسال واليوم تصل كمية غاز التغذية للمصنع الي 340 مليون قدم مكعب من الغاز الطبيعي وذلك لازدياد الطلب على الغاز الطبيعي والغاز البترولي المسال.

و ينقسم غاز التغذية إلى غاز غني وفقير اعتماداً علي نسبة البيوتان بالغاز , الغاز الغني يتكون من 270 مليون قدم مكعب يومياً قادم من حقول بدر- 3 و 30 مليون قدم مكعب يومياً قادم من حقول أبو سنان بينما الغاز الفقير يتكون من 340 مليون قدم مكعب قادم من حقول بدر -3 .

ينتج المصنع البوتاجاز والمتكثفات بالاضافة الي الغاز المعالج ذو المواصفات الخاصة المرسل الي شركة الدخيلة للحديد والصلب وغاز الوقود الذي يتم استخدامه بالمصنع وشركة العامرية لتكرير البترول والغاز الطبيعي المرسل الي مستهلكي الشبكة القومية.

يلعب المصنع دوراً رائداً في الاقتصاد القومي حيث يزيد القيمة الاقتصادية وعائدات الاحتياطي الواعد للغاز الطبيعي , وقد نري من خلال مطلب الطاقة المصري ومخطط التجهيز بان المصنع مستمر في تقليل الفجوة بين الإنتاج الوطني المصري للبوتاجاز والطلب المتزايد عليه , الذي يؤدي إلى توفير العملة الصعبة من الميزانية الموضوعة لاستيراد نقص كمية البوتاجاز المستهلكة بالنشاطات الصناعية المختلفة بالدولة , كما يجب ملاحظة مساهمة المصنع من إنتاج البوتاجاز إلى إنتاج الطاقة الأساسي الوطني الكلي بنسبة 15 % طبقاً لإحصائيات 1997 / 1998 وقد ساهم المصنع بإنتاج 10% من الإنتاج الوطني الكلي للبوتاجاز طبقاً لنفس إحصائيات السنة.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	12	92

Sieve Dehydration Package to reduce its water content to the required level for further processing. The inlet gas is first passed into the feed high efficiency separator designed to separate all liquid droplets up to 10 microns size, and is then filtered in the coalescing wire mesh included where 99% of droplets with diameter greater than 5 microns are removed.

There after, the gas is dried in the molecular sieve beds in the dryers before being passed into the dry gas filters where all solid particles are retained. Part of the dry gas is used as regeneration gas. A controlled stream of regeneration gas is compressed in two centrifugal compressors (one operating – one stand by) and then heated up to 260 o C in the direct fired heaters, These heaters represent an area for attraction in the context of our approach of energy saving proposals. The detailed study for the regeneration heater will follow in the next chapters. When leaving the molecular sieve beds, the hot regeneration gas filtered in the regeneration gas filter and cooled down to 45 o C by the air cooler. The regeneration gas is then mixed with the raw gas at the inlet of the high efficiency separator. Three mole sieve beds are installed. Each of them is designed to dry 150 MMSCFD of gas.

• يحتوي المصنع على العديد من وحدات التشغيل مثل وحدة التجفيف ، وحدة التبريد، وحدة التبريد بالبروبان ، وحدة التقطير ، وحدة التخزين و هذه الوحدات ستناقشُ سريعاً علي الوصف التالي.

وحدة التجفيف :

• تقوم وحدة التجفيف بالمناخل الجزيئية (والتي تنقسم الي 3 مجففات صمم كل منها لمعالجة 150 مليون قدم مكعب يومياً) بتقليل المحتوى المائي لغاز التغذية الغير معالج (المحتوي علي المياه والزيوت) اكثر من 90 جزء من المليون من المياه الي المستوي المطلوب لتحقيق افضلية المعالجة , يمر الغاز اولا من خلال فاصل ذو كفاءة عالية والذي صمم لفصل جميع قطرات الزيت بحدود حجم 10 ميكرون ثم ترشح من خلال شبكة السلك التي تقوم بإزالة القطرات التي يزداد حجمها عن 5 ميكرون , ثم يجفف الغاز بوحدة المناخل الجزيئية ثم يمر علي الفلاتر لفصل الجزيئات الصلبة به , و يستخدم جزء من الغاز الجاف كغاز إعادة تنشيط المجففات حيث يتم ضغطه من خلال ضاغط الطرد المركزي ليسخن الي درجة حرارة اعلي من 260 درجة مئوية من خلال المسخنات المباشرة والتي سيتم مناقشتها لاحقاً , وبعد مغادرة الغاز الساخن المجففات يمر علي فلاتر غاز إعادة التنشيط لاحتجاز المواد الصلبة ثم يتم خفض درجة حرارة الغاز الي 45 درجة مئوية من خلال المبردات الهوائية , وبعد ذلك يتم خلط غاز إعادة التنشيط مع غاز التغذية عن الفاصل ذو الكفاءة العالية.

Feed Gas Chilling

Dry gas is mixed with a recycled gas stream, and then it is chilled in two 50% identical heat exchanger trains. Each train contains three parallel legs, First gas / gas Exchanger, Second gas / gas Exchanger; the third is gas / Liquid Exchanger. The cooling load is obtained by the heat exchanging between the incoming gas to the plant, hot side and the sales gas leaving the plant, cold side. This pre-cooling process decreases the cooling load required by the next refrigeration stage. Flow control valves are used to satisfy the required controlled

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	13	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

parameters and at the same time to lower the temperature of the feed gas to propane chiller. In the third heat exchanger the cold side outlet temperature is maintained by a temperature controller which resets a flow controller located on the exchanger hot side feed gas inlet stream and the latter is used to regulate a flow control valve located on this stream.

Feed Gas Refrigeration

The propane refrigeration package, is utilized to provide refrigeration for the gas chilling trains via propane chiller, and circulated Condensate to the high pressure absorber via secondary Condensate sub cooler. The package is designed to operate properly in both summer and winter air temperature conditions. This package is the main consumer of the electrical energy in the plant as the two propane compressors represent nearly two thirds of the plant electrical energy demand. The two compressors are heavy-duty machines with no stand by ones, so failure of any of them results in 50% production losses. This package is a very important portion in the assessment and has a great potential of energy conservation and improvement opportunities.

LPG Absorption Package

Absorption, which is the chemical process applied to recover the LPG, is the counter current contact of gas and liquid solvent streams in multistage equipment; it applies the physical principle that different components of the gas have different solubilities in solvent. To attain the desired butane recovery (90%) without the need for a very low temperature (- 65 o C.) operation, absorption is used. A 25-tray absorber column is used to recover propane and butane from the feed gas, and cooled condensate is the absorbent. Chilled gas from both chilling trains enters the flash drum located in the

تبريد غاز التغذية (وحدة المبدلات الحرارية)

يتم خلط الغاز المجفف مع غاز المعاد معالجته ويتم تبريدهما من خلال وحدتين مبدلات حرارية متمثلتين 50 % ينقسم كل حدة الي ثلاث مبدلات الاول - غاز / غاز , الثاني - غاز / غاز , الثالث - غاز / سائل , ويتم التبريد من خلال التبادل الحراري بين الغاز المجفف الساخن و الغاز المعالج البارد وتعتبر هذه المرحلة هي مرحلة التبريد المبدئي تمهيداً لمرحلة التبريد القادمة , كما تستخدم بعض البلوف في التحكم في خفض درجة حرارة غاز التغذية. و في المرحلة الثالثة للتبادل الحراري يتم الحفاظ علي برودة الغاز البارد من خلال المتحكم في الحرارة من خلال المتحكم في معدل السريان.

وحدة التبريد بالبروبان :

تستخدم وحدة التبريد بالبروبان لتبريد الغاز القادم من حدة التبريد من خلال البروبان البارد , مع تدوير المكتثفات الي برج الفصل ذو الضغط العالي من خلال ميرد ثانوي للمكتثفات وقد صممت الوحدة لتعمل بشكل صحيح في كلتا شروط درجة الحرارة الجوية الصيفية والشتوية. وتعمل وحدة التبريد بالبروبان من خلال عدد 2 ضاغط للبروبان والتي تمثل المستهلك الرئيسي للطاقة الكهربائية بالمصنع , ويعتبر ضاغطي البروبان من معدات العمل الشاق ولا يوجد بديل لأي منهما لذا فان حدوث فشل لأي منهما قد يؤدي الي فقد 50% من الإنتاج , ولذلك فان هذه الوحدة تمثل جزء مهم جداً بالمصنع.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	14	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

bottom of the high-pressure absorber where gas is separated from liquid.

The flashed gases are contacted with fresh solvent (condensate from debutaniser bottom) which is fed to the top tray of the absorber after being cooled to (-30 o C). Condensate absorbent flow is maintained in a constant ratio to the feed gas flow through a ratio controller which opens/closes a flow control valve located on the condensate pump recycle discharge line to condensate holding drum. Overhead gases from the high-pressure absorber are split into the two streams Dekheila sales gas and national grid sales gas. To meet Dekheila sales gas specifications, the gas is cooled in gas heat exchanger, throttled, flashed in (Dekheila feed gas drum). Pipeline sales gas from the absorber overhead is used to cool the incoming feed gas and also to sub-cool the liquid propane refrigerant. Absorber bottom liquid plus flash drum liquid are mixed, throttled and used to generate the required reflux for the Depropanizer by cooling the tower top gases in the overhead condenser it is then flashed in the Depropanizer high pressure feed drum.

وحدة امتصاص البوتاجاز:

الامتصاص هي معالجة كيميائية تستخدم في استخلاص البوتاجاز من خلال عكس اتجاه تيار الغاز والسائل من خلال معدات متعددة الدرجات , والتي تطبق المبدأ الفيزيائي ان مكونات الغاز لها قابلية الذوبان المختلفة في السوائل. و لذلك يستخدم الامتصاص لتحقيق استرجاع البيوتان المطلوب (90%) دون الحاجة الي خفض درجة حرارة التشغيل الي -65 درجة مئوية

برج الامتصاص المتكون من 25 صينية يستخدم لاسترجاع البروبان والبيوتان من غاز التغذية مع اعتبار المتكثفات هي الجزء الماص , الغاز البارد القادم من وحدة التبريد يدخل الي الجزء السفلي من برج الامتصاص (وعاء الوميض) عندها يفصل الغاز عن السائل . بينما يتلامس الغاز المنفصل مع المتكثفات التي تم ادخالها الي قمة برج الامتصاص بعد خفض درجة حرارة المتكثفات الي -30 درجة مئوية مع الحفاظ علي معدل ثابت لسريان المتكثفات الماص مع معدل سريان غاز التغذية من خلال بلف التحكم في السريان الموجود عند ظلمبة إعادة المتكثفات الي الوعاء الخاص بها. الغازات الصاعدة من قمة برج الامتصاص تنقسم الي جزئين احدهما غاز الشبكة القومية والاخر غاز الدخيلة , ولكي نحصل علي المواصفات الخاصة بغاز الدخيلة يتم تبريد الغاز في مبدل حراري , يخفق , يومض (في وعاء استقبال غاز الدخيلة). يستخدم غاز الشبكة القومية في التبريد المبدئي للبروبان الخاص بوحدة التبريد بالبروبان. السوائل الموجودة بقاع برج الامتصاص بالاضافة الي سوائل وعاء الوميض تستخدم ببرج نازع البروبان.

Heating Oil Package

The heating oil system is used as an indirect heat transfer medium for the LPG fractionation unit. The heating oil system comprises heating oil heater, expansion vessel, sump and expansion vessels are blanketed with nitrogen or fuel gas to prevent the oxidation of heating oil which can cause heating oil degradation. The furnace heating capacity is 8029 G cal / hr., uses fuel gas of 8 bar, the operating temperature is 260 °C and The furnace internal pressure is 6.34 bar. The failure of this unit means no LPG recovery. The mentioned heater has a very high potential in energy saving project and represents an important area for this study.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	15	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

وحدة زيت التسخين:

Depropanizer Section

A 36 tray depropanizer column, is used to remove excess light components from the recovered absorbed Liquefied Natural Gas (LNG) to meet the LPG specification. Cold rich solvent from the high pressure absorber bottom provides the required cooling duty in the depropanizer overhead condenser, upon leaving the condenser it flashes in the depropaniser feed vessel. Flashed gases are compressed in the depropanizer feed vessel gas compressor and mixed with dehydrated feed gas upstream the chilling trains. Separated liquid from depropaniser overhead vessel is combined with liquid from Dekheila gas feed vessel and used to cool the plant feed gas in chilling train. Depropanizer overhead vapor is the source for plant fuel after being partially condensed and flashed in the depropanizer overhead accumulator.

إنّ نظامَ زيتِ التسخينِ يستخدمُ كوسطِ نقلِ حرارةٍ غيرِ مباشرةٍ لوحدةِ تقطيرِ البوتاجازِ. يَشْمَلُ نظامُ زيتِ التسخينِ علي سخانِ زيتِ التسخينِ , وعاءِ التمددِ , وعاءِ التمددِ و ببيارةِ يَغطيانِ بغازِ الوقودِ أو النتروجينِ لمَنعِ أكسدةِ زيتِ التسخينِ الذي يُمكنُ أنْ يُسببًا تحللِ زيتِ التسخينِ. السعةِ الحراريةِ للفرنِ هي 8029 كالوري/ ساعةٍ ويستخدمُ غازِ وقودِ بضغطِ 8 بارٍ ودرجةِ حرارتهِ 260 درجةِ مئويةٍ والضغطِ الداخلي للفرنِ 6.34 بارٍ . في حالةِ حدوثِ فشلٍ للفرنِ فان ذلك يؤدي الي فقدِ استرجاعِ البوتاجازِ.

برج نازع البروبان :

Debutanizer Section

A 40-tray debutanizer, fractionates the depropaniser bottom liquid LPG and condensate. Bottom condensate product is cooled successively in both condensate air cooler depropanizer feed preheater, and condensate subcooler, prior to splitting in the condensate holding vessel into condensate product and condensate recirculated to the absorber (lean fresh absorbent). Reboiling in the debutanizer bottom is achieved by heating oil medium. Debutanizer overhead vapor is the source of plant LPG after being totally condensed in the debutanizer overhead condenser, and flashed in the debutanizer overhead accumulator. Condensed LPG is partially refluxed to depropaniser tower. The remaining LPG is transferred to the spherical tanks after being cooled in the LPG cooler.

يتكون برج نازع البروبان من 36 صينية ويستخدم البرج في التخلص من المكونات الخفيفة الزائدة والنتيجة من استرجاع سوائل الغاز الطبيعي لتحقيق مواصفة البوتاجاز. السائل الغني بالبارد القادم من قاع برج الامتصاص يزيد التبريد المطلوب عند مكثفات برج ناع البروبان حيث يحدث وميض للغاز عند مغادرة مكثفات في وعاء تغذية برج نازع البروبان , الغازات الموضوعة تتضغط بواسطة ضاغط وعاء تغذية برج نازع البروبان حيث يتم خلطها مع الغاز القادم من وحدة التجفيف الي وحدة المبدلات الحرارية.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	16	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

LPG Storage Package

برج نازع البيوتان :

The LPG storage system comprises two spherical tanks, for on-spec LPG and one “cigar” Vessel for off- spec LPG. Each sphere is 12.5 meter diameter, 1020 m3 capacity, to hold on-specification LPG with a maximum capacity of 36 hours based on simulated process design cases. The cigar vessel is 362 m3 capacities, to hold off-spec LPG with a maximum capacity of 12 to 24 hours based on simulated process design cases. The switching between on-spec and off-spec LPG storage is being determined by manual sampling. Moreover, storage flexibility is provided utilize the cigar vessel for on-spec LPG. The product LPG is exported to PPC under flow controller by transfer pumps (3 x 50 %), with a total capacity of 150 m3/hr. to empty the sphere in 7 hours. Prior to LPG transfer, the LPG is odorized with ethyl mercaptan to ensure its safe transportation and detection of any leakage.

يتكون برج نازع البيوتان من 40 صينية , ويستخدم البرج في تجزئ سائل قاع برج نازع البروبان (البوتاجاز والمكثفات) . يبرد ناتج قاع برج نازع البيوتان (المكثفات) بواسطة المراوح الهوائية , غاز تغذية برج نازع البروبان قبل التسخين والمكثفات المبردة سيفصلا داخل وعاء المكثفات الي منتج المكثفات والمكثفات التي سيعاد تدويرها لبرج الامتصاص . إعادة التسخين لقاع برج نازع البيوتان من خلال وسط زيت التسخين . غاز قمة برج نازع البيوتان هو مصدر البوتاجاز بعد ان تم تكثيف جميع المكثفات بالمبردات وفصلها بوعاء التراكم. البوتاجاز المتكثف يعاد الي برج نازع البروبان ينما البوتاجاز لمتبقي يتم نقله الي مستودعات التخزين الكروية بعد ان تم تبريده بمبردات البوتاجاز.

LPG Storage Package

وحدة تخزين البوتاجاز :

The LPG storage system comprises two spherical tanks, for on-spec LPG and one “cigar” Vessel for off- spec LPG. Each sphere is 12.5 meter diameter, 1020 m3 capacity, to hold on-specification LPG with a maximum capacity of 36 hours based on simulated process design cases. The cigar vessel is 362 m3 capacities, to hold off-spec LPG with a maximum capacity of 12 to 24 hours based on simulated process design cases. The switching between on-spec and off-spec LPG storage is being determined by manual sampling. Moreover, storage flexibility is provided utilize the cigar vessel for on-spec LPG. The product LPG is exported to PPC under flow controller by transfer pumps (3 x 50 %), with a total capacity of 150 m3/hr. to empty the sphere in 7 hours. Prior to LPG transfer, the LPG is odorized with ethyl mercaptan to ensure its safe transportation and detection of any leakage

يتكون نظام تخزين البوتاجاز من مستودعين كرويين لتخزين البوتاجاز المطابق للمواصفات قطر كل منهما 12.5 م وسعة كل منهما 1020 متر مكعب لمدة اقصاها 36 ساعة طبقاً لحالات التصميم العملية المُقَدَّدة ومستودع سيجار لتخزين البوتاجاز الغير مطابق للمواصفات وسعته 362 متر مكعب ولمدة اقصاها من 12-24 ساعة طبقاً لحالات التصميم العملية المُقَدَّدة. ويتم التمييز بين البوتاجاز المطابق و الغير مطابق من خلال التحليل المعمل للعينات . يتم شحن منتج البوتاجاز المخزن الي شركة أنابيب البترول من خلال ظلمبات الشحن (3 ظلمبات) بسعة 150 متر مكعب /ساعة لكي يتم تفريغ المستودع في 7 ساعات , يتم إضافة مادة الايثيل ميركابتان الي البوتاجاز المنتج لضمان الامان أثناء عملية الشحن ولتحديد أي تسريب للبوتاجاز.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	17	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

Produced condensate Storage:

Condensate produced from the debutanizer reboiler is utilized mainly as absorbent to recover NGL from feed gases in the high-pressure absorber. The produced condensate is slightly lighter, higher in Raid Vapor Pressure (RVP) values, than stabilized condensate from conventional LPG plants due to the lower pentane (C5+) fraction in the feed gases. Surplus condensate will be directed under level controller located on condensate holding vessel, to the condensate storage tanks. The Condensate storage system comprises two floating roof, and Each tank is sized, 6 m diameter 6 m height, to handle 135 m³ capacity which represents one day's production. Condensate will be transferred to Petroleum Pipeline Company (PPC) via the Condensate transfer pumps, via 3 " pipeline.

تخزين منتج المتكثفات :

المتكثفات المنتجة من إعادة تسخين قاع برج نازع البيوتان يستخدم بعضها في استخلاص سوائل الغاز الطبيعي ببرج الامتصاص . المتكثفات المنتجة خفيفة و لها سرعة تبخير عالية بالمقارنة بالمنتج من مصانع استخلاص البوتاجاز التقليدية وذلك لانخفاض نسبة البنثان في غاز التغذية. الفائض من المتكثفات يتم توجيهها من خلال بلف التحكم في المنسوب الي مستودعات تخزين المتكثفات . يتم تخزين المتكثفات في 3 مستودعات ذات السقف العائم قطر كل منها 6 م وارتفاع كل منها 6 متر وسعت كل منهما 135 متر مكعب . يتم شحن المتكثفات الي شركة أنابيب البترول من خلال خط 3 بوصة.

Fuel Gas system

Depropanizer overhead gases are used as the main source for plant fuel gas at 12.5 Kg/cm². Fuel gas pressure is reduced to 8.0 kg.cm² to satisfy user requirements. Surplus gas is directed to PPC via 6 inch pipeline that is tied-in to the existing fuel system located at Petroleum Pipeline Company (PPC) premises downstream their pressure reducing facility. Fuel gas is conditioned in the fuel gas knock out vessel to separate any liquid condensed due to reducing its pressure. Fuel gas is utilized for firing the regeneration gas heaters, the heating oil heater, the flares pilots, flame front generator, and purging/blanketing at several areas.

نظام غاز الوقود :

غازات ناتج برج نازع البروبان هي المصدر الرئيسي لغاز الوقود بالمصنع عند 12.5 كجم/سم² . يخفض ضغط غاز الوقود الي 8 كجم/سم² طبقا لمتطلبات المستخدمين . يتم شحن الفائض من غاز الوقود الي شركة أنابيب البترول من خلال خط 6 بوصة . يتم فصل أي سوائل متعلقة بغاز الوقود بوعاء الفصل الخاص به نتيجة لخفض ضغط الغاز . كما يستخدم غاز الوقود في إشعال السخانات وفرن زيت التسخين و الشعلة و المولد الكهربائي و أعمال الكسح والتغطية.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	18	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

Oily Water Separation

A continuous oily water stream flows from regeneration gas K.O. vessel V- 151 to the oil /water separator system. The system comprises oil/water separator package, X-6, gravity sumps, storm water separator tank and transfer pumps. The oil layer accumulated in TK 911 is drained to the recovered oil sump Z-913 from which it is pumped to the condensate tanks. The separated water is discharged to the drainage canal.

وحدة فصل المياه والزيت :

سريان مستمر من الماء المختلط بالزيت من ضاغط إعادة التنشيط وناتج وعاء الفصل ذو الضغط العالي ., تحتوي الوحدة علي وحدة فصل المياه المختلطة بالزيت , وعاء الجاذبية , خزان فصل المياه والزيت. طبقات الزيت المتجمعة في الخزان 911 تصفي الي البيارة **Z-913** ثم يتم تدفيعها الي مستودعات المتكثفات ويتم تصريف المياه الي التربة.

Sanitary Sewage Treatment

Sanitary Sewage Treatment unit is used to treat the sanitary waste resulting from the different buildings of LPG recovery plant the unit comprises concrete lifting sump, lifting pumps, dosing pumps, effluent pumps, blowers, and tanks. The treated sewage water is discharged to the drainage canal.

وحدة معالجة الصرف الصحي :

تستخدم الوحدة في معالجة المخلفات الصحية الناتجة من مباني المصنع المختلفة وتتكون الوحدة من بيارة خرسانية و طلمبة رفع و طلمبة حقن و طلمبة تدفيع و دافع هواء وخزان وتم تصفية المياه الناتجة الي التربة.

Open and closed drain

Plant equipment and piping will drain either to open or closed systHSE Management System. The open drain system will handle mainly rains, fire and surface water. The closed drain system will handle hot and cold hydrocarbons drains during normal operations and after shut down periods.

خط التصفية المغلق والمفتوح :

يستخدم خط التصفية المفتوح لمياه الامطار ومياه الحريق و يستخدم خط التصفية المغلق المواد الهيدروكربونية الساخنة والباردة والناتجة من أعمال التشغيل وبعد فترة تطفئة المصنع.

Flaring system

The plant flaring system is used to flare plant equipment and piping trapped volume of gases when equipment over pressuring occurs, and during plant emergency situations. The system comprises cold and hot flares.

نظام الشعلة :

يستخدم نظام الشعلة للتخلص من الغازات الزائدة عند حدوث زيادة الضغط علي المعدات بالمصنع و أثناء تطفئة المصنع أثناء حالات الطوارئ . وتتكون الشعلة من جزئان احدهما ساخنة و الأخرى باردة.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	19	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

2- Administrative Activities:

Administrative works take place in most of LPG departmental activities to plan and follow up site activities. Inputs and outputs of such works are data and /or specifications recorded on hard copies of paper or on electronic media.

2- النشاطات الإدارية :

الانشطة الادارية تتم في قطاعات كثيرة بالمصنع بهدف متابعة انشطة المصنع . وادخال و إخراج البيانات والمواصفات والتقارير سواء كانت نسخة ورقية او الكترونية.

3- Material storage process:

Adequate storage areas are provided for each type of material / product. Stores for facilities, spare parts, materials, lube oil are available.

3- نظام تخزين المواد :

يتم تحديد الاماكن المناسبة لتخزين المواد والمنتجات من التسهيلات وقطع الغيار.....

4- Workshops and maintenance activities:

A general service workshop is available to provide maintenance and repair services of facilities and equipment. Maintenance Division has a preventive maintenance program for mechanical equipment, electrical equipment, and instruments.

4- انشطة الصيانة والورش :

تقوم ورشة الصيانة الرئيسية باعمال الصيانات و الإصلاح للتسهيلات والمعدات بالمصنع . كما يقوم إدارة الصيانة بتنفيذ خطط الصيانة الوقائية للمعدات الميكانيكية المختلفة بالمصنع وكذلك الأجهزة والمعدات الكهربائية.

5- Contracted operations:

Some activities and operations of LPG are completely achieved by contractors, through agreement protocols, such as construction, catering, and house keeping. And fuel supply works. Those contractors are working in LPG sites and have their assigned areas of work

5- أعمال المقاول :

يقوم المقاولين بآداء بعض الاعمال بالوقع من خلال توقيع عقد اتفاق مثل الإنشاءات وخدمات المعسكر وان جميع المقاولين العاملين بالمصنع لهم مهام ووظائف محددة .

6- Transportation operations:

LPG has about 17 mobile vehicles for staff and material transportation purposes. And one fire truck and ambulance car

6- عمليات النقل :

يوجد عدد 17 عربة وشاحنات و أوناش للعاملين ونقل المواد وأغراض الرفع وعربة إسعاف بالموقع :

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	20	92



HSE Management System

نظام إدارة السلامة والصحة المهنية والبيئة

GASCO-HSE-M

HSE Management System Manual

دليل نظام إدارة السلامة والصحة المهنية والبيئة

III- Cairo Area

- منطقة القاهرة:

Due to rapid increase in the investment opportunities in Egypt, the Egyptian Petroleum Ministry has adopted a wise policy to enhance and develop the national income by corroborating investing in the natural gas business to increase benefits.

GASCO (The Egyptian Natural Gas Company) traced this wise policy by considering effective actions following the best international standards in transportation, and distribution of natural gas through the National Gas Grid.

CAIRO AREA is one of six areas in GASCO. CAIRO AREA Started in 1976 supplying natural gas through Abu-Elgharadik network at pressure of 12 Bars. Four consumers– Tura Cement, Helwan Cement, Kawmia Cement and Iron & Steel factories in Helwan district; where at that time, the length of pipelines was 60 Km long handling 2.8 million m³ per day.

Today, Cairo area network is handling 30 million m³ per day has According to the increasing rates of development and investment, 24 consumers a distribution-share of about 32% of the total amount of natural gas distributed by the National Gas Grid. This is achieved by a 600 km long network, varies between 10" and 34" diameters pipelines , represents about 18% of the total length of the National Gas Grid .

Cairo Area network consists mainly of the administrative building in Moqattam, two main distribution centers in Eltebbin and Elshrqaweya, 19 reduction stations and 56 valve rooms spreads from Benha (on Cairo –Alex agri road) and Sadat city at the far north of Cairo to Koriemat and Za'farana at the far south of Giza and from 10th of Ramadan (77th km Cairo - Isamielia road) at the far east of Cairo to 6th of October city at the far west of

نتيجة لزيادة فرص الاستثمار في مصر فان وزارة البترول المصرية اتخذت سياسة حكيمة لزيادة وتنمية الدخل القومي عن طريق تأييد الاستثمار في مجال الغاز الطبيعي. ولكي تحقق جاسكو هذه السياسة الحكيمة فقد قامت باتخاذ خطوات فعالة عن طريق إتباع أفضل الأكواد العالمية المعمول بها في مجال نقل وتوزيع الغاز من خلال الشبكة القومية.

إن منطقة القاهرة هي أحد ست مناطق في جاسكو والتي بدأت العمل بها سنة 1976 من خلال إمدادات الغاز عبر خط أبو الغراديق بضغط 12 بار حيث كان عدد المستهلكين وقتها أربعة مصانع (أسمنت طره, أسمنت حلوان, أسمنت القومية, مصنع الحديد والصلب) وذلك بمنطقة حلوان. وكان يبلغ إجمالي طول الخطوط التابعة للمنطقة 60 كم تحمل 2.8 مليون م³ / يوم

واليوم تقوم منطقة القاهرة بنقل 30 مليون م³ / يوم ويوجد 24 عميل ويتم توزيع 32% من كمية الغاز المنقولة يوميا بالشبكة القومية.

وذلك يتحقق من خلال شبكة يبلغ طولها 600 كم وتتراوح أقطارها من 10" إلى 34" وهو يمثل حوالي 18% من إجمالي طول الشبكة القومية للغازات الطبيعية. تتكون منطقة القاهرة من مبنى إداري بمنطقة المقطم مع وجود مركزي توزيع رئيسية في التبين والشرقاوية. كما يوجد 19 محطة تخفيض, 56 غرفة بلوف منتشرة من حدود بنها (على طريق القاهرة /إسكندرية الزراعي) ومن مدينة السادات في أقصى شمال القاهرة وحتى الكريمت والزعرانة في أقصى جنوب الجيزة ومن مدينة العاشر من رمضان (الكيلو 77 طريق القاهرة / الإسماعيلية) في أقصى شرق مدينة القاهرة وحتى مدينة أكتوبر في أقصى غرب مدينة القاهرة.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	21	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

Cairo covers an enormous area of five governorates: وتغطي منطقة القاهرة مناطق مختلفة من خمسة محافظات:

- 1- Cairo
- 2- Giza
- 3- Kalyoubia
- 4- Sharqia
- 5 - Beni-Swef

1. القاهرة
2. الجيزة
3. القليوبية
4. الشرقية
5. بني سويف.

The main lines in Cairo gas grid are as follow:

- Elshrqaweya / Heliopolis 24" with 19.8 km length.
- Hawamdia sugar 10" with 13 km length.
- Dahshour / Koriemat 22" with 90 km length.
- Koriemat / Za'farana 18" with 32 km length - belongs to Cairo Area.
- Tanash / Dahshour 20" with 65 km length.
- Amrya / Dahshour 32" with 91 km length - belongs to Cairo Area.
- Shabab line 16" with 84 km length - belongs to Cairo Area.
- Benha / Elshrqaweya 28" with 43 km length - belongs to Cairo Area.
- Tina / Mit-nama 32" with 85 km length - belongs to Cairo Area.

الخطوط الرئيسية بمنطقة القاهرة:

- الشرقاوية / هليوبوليس 24" بطول 19.8 كم.
- سكر الحوامدية 10" بطول 13 كم.
- دهشور / الكريمات 22" بطول 90 كم
- الكريمات / الزعفرانة 18" بطول 32 (الطول التابع للمنطقة)
- طناش / دهشور 20" بطول 65 كم
- العامرية / دهشور 32" بطول 91 كم
- (الطول التابع للمنطقة)
- خط الشباب 16" بطول 84 كم (الطول التابع للمنطقة)
- بنها / الشرقاوية 28" بطول 43 كم (الطول التابع للمنطقة)
- التينة / ميت نما 32" بطول 85 كم (الطول التابع للمنطقة)

These lines and stations in Cairo area have 4 distribution centers they are:

- Elshrqaweya
- Marazik (Nile east crossing)
- Tanash
- Dahshour

*** هذه الخطوط والمحطات بمنطقة القاهرة لها أربع مراكز توزيع :**

- الشرقاوية
- المزاريق (التعدية الشرقية لنهر النيل)
- طناش
- دهشور

In order to maintain the effective operation and maintenance of this network Cairo area makes grand efforts in the field of stations and valve room's inspection , Cathodic protection and pipelines patrols using the most recent and advanced techniques to maintain the company investments and guarantee that all customers are supplied and satisfied with their daily demand of natural gas.

- من اجل تحقيق التشغيل الفعال والصيانة لشبكة منطقة القاهرة فان المنطقة تبذل جهد كبير في مجال التفتيش على الغرف والمحطات ، الحماية الكاثودية للخطوط ، فرق المرور على مسارات الخطوط باستخدام أحدث تكنولوجيا متاحة للحفاظ على استثمارات الشركة ولضمان رضا العملاء وتوصيلهم احتياجاتهم من الغاز الطبيعي

Cairo area has 206 employees each one of them makes his best to assure that all the company targets and policies are accomplished.

- يوجد بمنطقة القاهرة 206 موظف يبذل كل منهم أفضل ما لديه لتحقيق سياسة وأهداف الدولة

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	22	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

IV- ALEX. AREA

منطقة الإسكندرية

Alex, area is one of the oldest region of GASCO'S regions in the field of gas transmission and distribution.

Alex, area pipelines length is around 601.366 KM and its volume of gas transmission is about 41 millions m³ / day through 5 head centers as following: -

1-El Ameria receiving and distribution center:

This distribution center receives gas from Ameria LPG recovery plant through 24" pipe line , 12" pipe line and 6" pipe line and from C2fC3 plant through 24" pipe line then gas enters to filtration stage then to measuring stage then the pipe lines are branched to the following pipe lines:

- Sidi Krir 24" pipeline.
- Dekhela Iron Steel 18" pipe line.
- Betrochemical 18" pipe line.;
- Efarana ceramic 10" pipe line.
- America for petrol 12" pipe line.
- America / Maadeia 24" pipe line.

2- El Maedia receiving and distribution center:

This distribution center receives gas from Delta Area through 28"V20" pipe line and WEPCO recovery plant through 16" pipe line then gas enters to filtration stage then to measuring stage then the pipe lines are branched to the following pipe lines:

- El Maadeia / Ameria 24"J1 pipe line.
- Abu Qir Fertilizers 16" pipe line.

منطقة الإسكندرية تعتبر واحدة من أقدم مناطق شركة جاسكو في مجال نقل وتوزيع الغاز الطبيعي

يقدر طول أنابيب نقل الغاز بمنطقة الإسكندرية 601.366 كم وحجم الغاز المنقول بقدر تقريبا ب 41 مليون م³ / يوم من خلال خمس مراكز توزيع رئيسية كالاتي :

1- مركز استقبال وتوزيع العامرية :

يتم استقبال الغاز بالمركز من مصنع بوتاجاز العامرية LPG من خلال خط 24" ، 12" ، 6" ومن مجمع غازات الصحراء الغربية من خلال خط 24" وبعد ذلك يدخل الغاز إلى مرحلة الفلترة وبعدها مرحلة القياس وبعدها إلى خط الغاز الذي يتفرع إلى الخطوط الآتية :

- * خط سيدي كرير
- * خط حديد صلب الدخيلة 18"
- * خط البتروكيماويات 18"
- * خط سيراميك الفراعنة 10"
- * خط العامرية للبتترول 12"
- * خط العامرية / المعدية 24"

2- مركز استقبال وتوزيع المعدية

يتم استقبال الغاز من منطقة الدلتا من خلال خط 28" ، 20" ومن مصنع ويبيكو من خلال خط 16" وبعد ذلك يدخل الغاز إلى مرحلة الفلترة وبعد ذلك إلى مرحلة القياس وبعدها إلى خط الغاز الذي يتفرع إلى الخطوط الآتية :

- * خط المعدية / العامرية 24"
- * خط سماد أبو قير 16"

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	23	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

3-Faculty of Agriculture Land receiving and distribution center:

This distribution center receives gas from El Maadeia / Ameria 24" pipe line through a 12" branch then gas enters to filtration stage then to measuring stage then the pipe line is branched to the following pipe lines;

- Town gas 12" pipe line.
- E! Seuif power station 14" pipe line.

3- مراكز استقبال وتوزيع ارض كلية الزراعة :

يتم استقبال الغاز بالمركز من خط المعدية / العامرية 24" من خلال فرع 12" وبعد ذلك يتم دخول الغاز مرحلة الفلترة ومن بعدها مرحلة القياس ومن بعدها إلى خط الغاز الذي يتفرع إلى الخطوط الآتية :

- * خط تاون جاس 12"
- * خط محطة كهرباء السويفي 14"

4- El Beda receiving and distribution center:

This distribution center receives gas from El Maadeia / Ameria 24" pipe line through a 10" branch then gas enters to filtration stage then to measuring stage then the gas get out through 20" pipe line to Abu Saleh valves room at which the pipe line is branched to the following pipe lines:

- Nata Gas Kafr El Dawar 12" pipe line.
- industrial silk 12" pipe line.

4- مركز استقبال وتوزيع البيضاء :

يتم استقبال الغاز بالمركز من خط المعدية / العامرية 24" من خلال فرع 10" وبعد ذلك يتم دخول الغاز مرحلة الفلترة ومن بعدها إلى مرحلة القياس ومن بعدها ليخرج خلال خط 20" إلى غرفة بلوف أبو صالح والذي يتفرع الخط بها إلى الخطوط الآتية :

- * خط ناتاجاس كفر الدوار 12"
- * خط مصنع الحرير 12"

5- Mahmodeia receiving and distribution center:

This distribution center receives gas from El Borolos gas field and Rashid gas field through 28" pipe line then gas enters to filtration stage then to measuring stage then the pipe line is branched to the following pipe lines:

- Delta Area 28" pipe line.
- El Mahmudia power station 16" pipe line.
- Damanhour power station 16" pipe line.

5- مركز استقبال وتوزيع المحمودية :

يتم استقبال الغاز بالمركز من حقل غاز البرولس ومن حقل غاز رشيد من خلال خط 28" وبعد ذلك يتم دخول الغاز إلى مرحلة الفلترة ومن بعدها مرحلة القياس ومن بعدها يتفرع إلى الخطوط الآتية :

- * خط منطقة الدلتا 28"
- * خط محطة كهرباء المحمودية 16"
- * خط محطة كهرباء دمنهور 16"

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	24	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

V- DELTA AREA

Delta area is the oldest region of GASCO'S regions in the field of gas transmission and distribution. Delta area pipelines length is around 370 KM and its volume of gas transmission is about 20 millions m3 / day through 3 head centers as following: -

1- ABU MADI receiving & distribution center

It lies beside PETROPEL company in ABU MADI region and it receives the produced gas from old petropel fields through 22" pipeline then gas enters to filtration stage then to measuring stage then the line is branched to the following pipelines :-

- ABU MADI / DAKHLIA SUGAR company 6" pipeline ABU MADI / TALKHA 22" pipeline.
- ABU MADI / TALKHA 12" pipeline.

There is another line (PORT SAID / DOMIAT 24" pipeline) coming from HAPY field to feed DOMIAT power station then the residual gas is charged to ABU MADI through DOMIAT / ABU MADI 16" pipeline after feeding in the way RIPCO company.

There is another pipeline (22" QARAA pipeline) extended from Petropel to TALKHA its mission is to transfer gas from new Petropel fields in ABU MADI region to TALKHA distribution center.

2- TALKHA distribution center

It is the head center of Delta region. TALKHA distribution center receives gas from 12" & 22" & 22"(QARAA) pipelines which coming from ABU MADI which mentioned above .

5- منطقة الدلتا

- منطقة الدلتا من أقدم مناطق شركة جاسكو في مجال نقل وتوزيع الغاز الطبيعي

- يقدر طول أنابيب نقل الغاز بمنطقة الدلتا 370 كم وحجم الغاز المنقول 20 مليون م3/ اليوم من خلال ثلاث مراكز توزيع كالاتي :

1- مركز استقبال وتوزيع أبو ماضي :

- موقعه بجانب شركة بترول بمنطقة أبو ماضي ويتم استقبال الغاز المنتج من حقول بترول القديمة من خلال خط 22" وبعد ذلك يتم دخول الغاز إلى مرحلة الفلترة ومن بعدها مرحلة القياس وبعد ذلك إلى خط الغاز الذي يتفرع إلى الخطوط الآتية:

* خط أبو ماضي / شركة سكر الدقهلية 6" وأبو ماضي / طلخا 22"

* خط أبو ماضي / طلخا 12"

وهناك خط آخر (بور سعيد / دمياط 24") يأتي من حقل حابي ليغذي محطة كهرباء دمياط وبعد ذلك الغاز المتبقي يتم شحنه إلى أبو ماضي من خلال خط دمياط / أبو ماضي 16" بعد تغذية شركة ريبكو في الطريق.

هناك خط آخر (خط القرعة 22") يمتد من بترول إلى طلخا ومهمته نقل الغاز من حقول بترول الجديدة بمنطقة أبو ماضي إلى مركز توزيع طلخا.

2- مركز توزيع طلخا :

يعتبر المركز الرئيسي لمنطقة الدلتا

مركز توزيع طلخا يستقبل الغاز من خط 12" ، 22" القادمين من أبو ماضي الذي تم الإشارة عنهم بعاليه.

بعد ذلك يتم توزيع الغاز كالاتي :

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	25	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

Then the gas is distributed as follow: -

- 16" pipeline feeds TALKHA power station.
- 2 pipelines 8" feed TALKHA Fertilizer Company.
- 6" pipeline feeds 2 (CNG) stations (GASTEC Company).

After feeding those consumers the residual gas is charged to SHABSHIR distribution center by 28" pipeline after feeding in the way the following companies:-

- EGYPT gas station which feeds MANSURA town.
- MISR / EL- MAHALLA spinning and weaving company.
- ELNASR company
- ATTA Brothers Company.
- EGYPT gas in MAHALLA.

3- SHABSHIR distribution center

This center plays an essential role in the connection between DELTA area, ALEXANDRIA area & CAIRO area.

In SHABSHIR distribution center the following pipelines is aggregated:-

- TALKHA / SHABSHIR 28" pipeline.
- DESOUK / SHABSHIR 28" pipeline.
- SHABSHIR / EL- SHARKAWIA 28" pipeline.

Two 28" headers connect all these lines with each other.

The residual gas of DELTA area is charged to SHABSHIR through 28" pipeline then this center play an important role in supply of gas to CAIRO region through SHABSHIR / EL- SHARKAWIA 28" pipeline and in the way this line feeds houses of TANTA town in MEET HEBISH, QUESNA CERAMIC company, EGYPT gas company in BANHA and EGYPT gas in MONOFIA government.

DESOUK / SHABSHIR 28" pipeline feed gas to TRANS GAS company which feeds KAHR EL-SHIKH sugar factory and houses of KAHR EL-SHIKH.

* خط 16 يغذي محطة كهرباء طلخا

* خطين 8 يغذوا شركة سماد طلخا

* مأخذ محطة غازتاك 6 و كار جاس

بعد تغذية هؤلاء العملاء الغاز المتبقي يشحن إلى مركز توزيع شبشير بواسطة خط 28 بعد أن يتم تغذية الشركات الآتية في الطريق :

* محطة غاز مصر التي تغذي منازل

* شركة مصر / المحلة للغزل والنسيج

* شركة النصر

* شركة إخوان عطا

* غاز مصر في المحلة

3- مركز توزيع شبشير :

- يلعب هذا المركز دور أساسي في الربط بين منطقة الدلتا ومنطقة الإسكندرية ومنطقة القاهرة

- في مركز شبشير يتم تجميع الخطوط الآتية :

* خط طلخا / شبشير 28"

* خط دسوق / شبشير 28"

* خط شبشير / الشرقاوية 28"

هناك خطين رئيسيين 28" تربط هذه الخطوط مع بعضها.

المتبقي من غاز منطقة الدلتا يتم دفعه إلى شبشير من خلال خط 28 والذي يلعب دور محوري مهم في إمداد الغاز إلى منطقة القاهرة من خلال خط شبشير / الشرقاوية 28" و في طريقها يتم تغذية مدينة طنطا في ميت حبيش، شركة سيراميك قويسنا، شركة غاز مصر في بنها وغاز مصر في محافظة المنوفية.

خط دسوق / شبشير 28" يغذي شركة ترانس غاز والتي تغذي مصنع كفر الشيخ للسكر ومنازل كفر الشيخ.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	26	92

 <p>Egyptian Natural Gas Co. الشركة المصرية للغازات الطبيعية</p>	<p>HSE Management System</p> <p>نظام إدارة السلامة والصحة المهنية والبيئة</p>	<p>GASCO-HSE-M</p>
<p>HSE Management System Manual</p> <p>دليل نظام إدارة السلامة والصحة المهنية والبيئة</p>		

VI- Canal & Sinai area

6- منطقة القناة وسيناء

CSA mission as defined

Using the most update worldwide technologies in natural gas transmission

CSA vision as defined

To classify the CSA as a pioneer area in the field of gas transmission and distribution to be capable of competing with other international gas transmission and distribution areas

1- Operations and Activities

The CSA operation activities include:

- **Operation monitoring**
 1. Monitoring PRS
 2. Maintenance activities Supervision
 3. Production fields monitoring
- **Follow up site development**
- **Commissioning, start up, and operation of PRS**
- **Gas balance daily report**

2- Administrative Activities:

Administrative works takes place in most of CSA departmental activities to plan and follow up site activities. Inputs and outputs of such works are data and or specification recorded on hard copies of paper or on electronic media.

3- Material storage process:

Adequate storage containers are available for each type of material

4- Workshops and maintenance activities:

A general service workshop is available to provide maintenance and repair services of facilities and equipment

مهمة القناة وسيناء تعرف كالآتي:

استخدام أحدث وأكثر الوسائل التكنولوجية في مجال نقل الغاز الطبيعي.

رؤية منطقة القناة وسيناء تعرف كالآتي:

لتصنيف منطقة القناة وسيناء كمنطقة رائدة في مجال نقل وتوزيع الغاز الطبيعي ليكون عندها القدرة على المنافسة مع المناطق العالمية في نقل وتوزيع الغاز الطبيعي.

1- التشغيل والانشطة :

ان الانشطة العملية لمنطقة القناة وسيناء تتضمن الاتي:

- **مراقبة العمليات**
 1. مراقبة محطات التخفيض.
 2. الاشراف على عمليات الصيانة.
 3. مراقبة حقول الانتاج.
- **متابعة تنمية الموقع.**
- **تشغيل محطات التخفيض.**
- **تقرير يومي عن توازن الغاز.**

2- النشاطات الادارية:

ان الاعمال الادارية تشكل الجزء الاكبر من نشاطات المنطقة لتخطيط ومتابعة نشاطات المنطقة. ان مدخلات ومخرجات هذا النوع من الاعمال تعامل كبيانات أو /و مواصفات تسج على أوراق أو على وسائط الكتروني (كمبيوتر)

3- عملية تخزين المواد

هناك أوعية كافية لعملية تخزين كل المواد.

4- ورش عمل وعمليات الصيانة:

ان هناك ورش وخدمات عام متاحة بالمنطقة للحصول على خدمات تصليحية وصيانة للمعدات والتسهيلات.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	27	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

5- Contracted operations:

5- عمليات المقاولات:

Some activities and operations of CSA are completely achieved by contractors, through agreement protocols, such as construction, house keeping those contractors are working in CSA sites and have their assigned areas of work

إن بعض العمليات والنشاطات الخاصة بمنطقة القناة وسيناء يتم التوصل اليها كاملة عن طريق المقاولين, من خلال تعاقدات مثل الانشاءات .
 أماكن عمل هؤلاء المقاولين داخل منطقة القناة وسيناء معرفة لهم.

6- Transportation operations:

6- عمليات النقل:

CSA has about 8 mobile vehicles for staff and material transportation purposes.

ان منطثة القناة وسيناء تمتلك 8سيارات لنقل العاملين والمواد

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	28	92

 <p>Egyptian Natural Gas Co. الشركة المصرية للغازات الطبيعية</p>	<p>HSE Management System</p> <p>نظام إدارة السلامة والصحة المهنية والبيئة</p>	<p>GASCO-HSE-M</p>
<p>HSE Management System Manual</p> <p>دليل نظام إدارة السلامة والصحة المهنية والبيئة</p>		

VII- Gulf Of Suez area

GSA mission as defined

Using the most update worldwide technologies in natural gas transmission.

GSA vision as defined

To classify the GSA as a pioneer area in the field of gas transmission and distribution to be capable of competing with other international gas transmission and distribution areas.

1- Operations and Activities

The GSA operation activities include:

- Operation monitoring
- 1- Monitoring PRS
- 2- Maintenance activities Supervision
- 3- Production fields monitoring
- Follow up site development
- Commissioning, start up, & operation of PRS
- Gas balance daily report

2- Administrative Activities:

Administrative works takes place in most of GSA departmental activities to plan and follow up site activities. Inputs and outputs of such works are data and or specification recorded on hard copies of paper or on electronic media.

3- Material storage process:

Adequate storage containers are available for each type of material

4- Workshops and maintenance activities:

A general service workshop is available to provide maintenance and repair services of facilities and equipment

- منطقة خليج السويس

مهمة منطقة خليج السويس تعرف كالآتي:

استخدام أحدث وأكثر الوسائل التكنولوجية في مجال نقل الغاز الطبيعي.

رؤية منطقة خليج السويس تعرف كالآتي:

لتصنيف منطقة خليج السويس كمنطقة رائدة في مجال نقل وتوزيع الغاز الطبيعي ليكون عندها القدرة على المنافسة مع المناطق العالمية في نقل وتوزيع الغاز الطبيعي.

1- التشغيل والانشطة :

ان الانشطة العملية لمنطقة القناة وسيناء تتضمن الآتي:

• مراقبة العمليات

1. مراقبة محطات التخفيض.
2. الاشراف على عمليات الصيانة.
3. مراقبة حقول الانتاج.

• متابعة تنمية الموقع.

• تشغيل محطات التخفيض.

• تقرير يومي عن توازن الغاز.

2- النشاطات الادارية:

ان الاعمال الادارية تشكل الجزء الاكبر من نشاطات المنطقة لتخطيط ومتابعة نشاطات المنطقة. ان مدخلات ومخرجات هذا النوع من الاعمال تعامل كبيانات أو /و مواصفات تسج على أوراق أو على وسيط الكتروني (كمبيوتر)

3- عملية تخزين المواد

هناك أوعية كافية لعملية تخزين كل المواد.

4- ورش عمل وعمليات الصيانة:

ان هناك ورش وخدمات عام متاحة بالمنطقة للحصول على خدمات تصليحية وصيانة للمعدات والتسهيلات.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	29	92

	<p>HSE Management System</p> <p>نظام إدارة السلامة والصحة المهنية والبيئة</p>	<p>GASCO-HSE-M</p>
<p>HSE Management System Manual</p> <p>دليل نظام إدارة السلامة والصحة المهنية والبيئة</p>		

5- Contracted operations:

5- عمليات المقاولات:

Some activities and operations of GSA are completely achieved by contractors, through agreement protocols, such as construction, house keeping those contractors are working in GSA sites and have their assigned areas of work

إن بعض العمليات والنشاطات الخاصة بمنطقة خليج السويس يتم التوصل اليها كاملة عن طريق المقاولين, من خلال تعاقدات مثل الانشاءات .
أماكن عمل هؤلاء المقاولين داخل منطقة خليج السويس معرفة لهم.

6- Transportation operations:

6- عمليات النقل:

GSA has about 12 mobile vehicles for staff and material transportation purposes.

ان منطقة خليج السويس تمتلك 12 سيارات لنقل العاملين والمواد.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	30	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

VIII- Industrial areas

- المناطق الصناعية

Industrial areas mission as defined

Using the most update worldwide technologies in natural gas transmission

مهمة المناطق الصناعية تعرف كالآتي:

استخدام أحدث وأكثر الوسائل التكنولوجية في مجال نقل الغاز الطبيعي.

Industrial areas vision as defined

To classify the industrial areas as a pioneer area in the field of gas transmission and distribution to be capable of competing with other international gas transmission and distribution areas

رؤية المناطق الصناعية تعرف كالآتي:

لتصنيف المناطق الصناعية كمنطقة رائدة في مجال نقل وتوزيع الغاز الطبيعي ليكون عندها القدرة على المنافسة مع المناطق العالمية في نقل وتوزيع الغاز الطبيعي.

1- Operations and Activities

The industrial areas operation activities include:

- Operation monitoring
- 1- Monitoring PRS
- 2- Maintenance activities Supervision
- 3- Production fields monitoring
- Follow up site development
- Commissioning, start up, & operation of PRS
- Gas balance daily report

1- التشغيل والانشطة :

إن الانشطة العملية للمناطق الصناعية تتضمن الآتي:

• مراقبة العمليات

1. مراقبة محطات التخفيض.
2. الاشراف على عمليات الصيانة.
3. مراقبة حقول الانتاج.

• متابعة تنمية الموقع.

• تشغيل محطات التخفيض.

• تقرير يومي عن توازن الغاز.

2- Administrative Activities:

Administrative works takes place in most of industrial areas departmental activities to plan and follow up site activities. Inputs and outputs of such works are data and or specification recorded on hard copies of paper or on electronic media.

2- النشاطات الادارية:

إن الاعمال الادارية تشكل الجزء الاكبر من نشاطات المنطقة لتخطيط ومتابعة نشاطات المنطقة. ان مدخلات ومخرجات هذا النوع من الاعمال تعامل كبيانات أو /و مواصفات تسج على أوراق أو على وسيط الكتروني (كمبيوتر)

3- Material storage process:

Adequate storage containers are available for each type of material

3- عملية تخزين المواد

هناك أوعية كافية لعملية تخزين كل المواد.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	31	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

4- Workshops and maintenance activities:

4- ورش عمل وعمليات الصيانة:

A general service workshop is available to provide maintenance and repair services of facilities and equipment

إن هناك ورش وخدمات عام متاحة بالمنطقة للحصول على خدمات تصليحية وصيانة للمعدات والتسهيلات.

5- Contracted operations:

5- عمليات المقاول:

Some activities and operations of industrial areas are completely achieved by contractors, through agreement protocols, such as construction, house keeping those contractors are working in industrial areas sites and have their assigned areas of work.

إن بعض العمليات والنشاطات الخاصة بالمناطق الصناعية يتم التوصل إليها كاملة عن طريق المقاولين, من خلال تعاقدات مثل الانشاءات . أماكن عمل هؤلاء المقاولين داخل المناطق الصناعية معرفة لهم.

6- Transportation operations:

6- عمليات النقل:

Industrial areas have about 8 mobile vehicles for staff and material transportation purposes.

إن المناطق الصناعية تمتلك 8 سيارات لنقل العاملين والمواد.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	32	92

IX- Headquarters

The headquarter site covers an area of land about 20 thousand m² almost, it is surrounded by land space (buildings) from the north, from South by garage particular workers & from east and west it is surrounded by two main streets width 54 meters.

Site land area is surrounded by constructed fence has two main gates each with width six meters, one laid in the east and the other in the west.

The building has three wings (eastern, northern & southern) and covers an area of the land about 3700 m², the rest of the area is green areas, garage and services buildings.

The building has eight stores (5 frequent floors, earth floor, low-Earth floor, and Basement (garage) in addition to roof, the building is consist of the 587 rooms).

There are three main stairs (between each wing and central circuit) and there are three emergency stairs at the end of each wing used in the evacuation and escape, in addition there are six electric elevators pair at each wing.

There is also a circular building in the middle of the administrative building consists of a two-story (and it is not connected to the three wings) it can be access through the first floor from ceremony hall, or through second floor, SCADA hall.

There is a garage under the whole building area, in the basement, has three sloped entrance & exits (each entrance & exit under each wing) the garage area is consisting of:

- (9) stores.
- (8) Chamber of workers offices.
- (6) Air conditioning units.
- (1) UPS Chamber.
- (1) kitchen.

9- المركز الرئيسي

تبلغ مساحة ارض الموقع حوالي 20 ألف م² تقريباً ويحيط به من الشمال أرض فضاء (مباني) ومن الجنوب جراج خاص بالعمالين ومن الشرق والغرب شوارع رئيسية بعرض 54متر تقريباً. ويوجد سور من البناء حول مساحة الأرض بالكامل وبه بوابتين رئيسيتين بعرض ستة أمتار إحداهما أمامية بين الجناحين الشمالي والجنوبي والأخرى خلفية أمام الجناح الشرقي. ويتكون المبنى من ثلاثة أجنحة شرقية وشمالية وجنوبية، وتبلغ مساحة الأرض التي أقيم عليها المبنى حوالي 3700م² تقريباً وباقي المساحة عبارة عن مناطق خضراء وساحة انتظار سيارات ومباني خدمات.

ويتكون المبنى من 8 طوابق (5 طوابق متكررة وطابق أرضي منخفض وطابق أرضي مرتفع وبدروم (جراج) بالإضافة للسطح وتحتوي هذه الطوابق على 587 غرفة). و يخدم المبنى عدد ثلاثة سلالم رئيسية توجد عند التقاء دائرة المنتصف مع كل جناح كما يوجد ثلاثة سلالم طوارئ في آخر كل جناح تستخدم في عمليات الإخلاء والهروب بالإضافة إلى ستة مصاعد كهربائية بواقع مصعدين بكل جناح أمام السلم الرئيسي..

كما يوجد مبنى دائري في منتصف المبنى الإداري ويتكون من طابقين وهذا المبنى غير متصل بالأجنحة الثلاثة لكن يمكن الدخول إليه من خلال الطابق الأول من قاعة الاحتفالات. ومن الطابق الثاني من صالة مركز التحكم للشبكة القومية.

الجراج بكامل مساحة المبنى وله ثلاثة مداخل منحدره للدخول والخروج مدخل أسفل كل جناح وهو يتكون من :

- عدد (9) مخازن .
- عدد (8) غرفة شاغرة بمكاتب العاملين.
- عدد (6) وحدات تكييف .
- عدد (1) غرفة الـ UPS .
- عدد (1) مطبخ .

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	33	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

There roof of the building consists of:

- (7) Central, in the middle circle.
- (3) air-conditioning units.
- (3) rooms each in the end of emergency stair.
- (3) Electrical elevators rooms.

ويوجد بسطح المبني الآتي:
عدد (7) غرفة سنترال في دائرة المنتصف.
ثلاثة وحدات تكييف.
غرفة في نهاية سلم الطوارئ عند كل جناح.
غرف المصاعد الكهربائية وعددها ثلاثة.

The auxiliary services buildings are, water tank, air conditioning units building, transformers room, water fire pumps room, electric generator room, rooms for electricity distribution panel.

أما المباني الملحقة للخدمات فتتمثل في خزان المياه , مبنى وحدات التكييف, غرف المحولات , غرفة ظلمبات الحريق , غرفة المولد الكهربائي, غرف لوحات توزيع الكهرباء.

The existing activities in the headquarters represented in the management of national grid natural gas network “ transportation and distribution” and NATA Control Center, as well as the management of natural gas processing facilities and also the consequent activities: -

- Building and its utilities maintenance activities
- storage activities
- Office work
- Distribution of energy activities
- Waste management activities
- Employees transportation
- etc.

وتتمثل الأنشطة الموجودة بالمبنى في أعمال إدارة كل ما يختص بشبكة نقل وتوزيع الغاز الطبيعي ومركز التحكم القومي وإدارة شبكات الغاز وكذلك كل ما يخص إدارة تسهيلات الغاز و ما يستتبع ذلك من أعمال تتمثل في :-

- أعمال صيانة المبني وملحقاته
- أعمال تخزين للخامات
- الأعمال المكتبية
- أعمال توزيع الطاقة
- أعمال نقل الموظفين
- أعمال التخلص من النفايات
- إلخ

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	34	92

 <p>Egyptian Natural Gas Co. الشركة المصرية للغازات الطبيعية</p>	<p>HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة</p>	<p>GASCO-HSE-M</p>
<p>HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة</p>		

Manpower

الطاقة البشرية

All sites working force is:

الطاقة العاملة بجميع مواقع جاسكو كالاتي:

Total manpower: About 3000 persons
GASCO personnel: About 2750 persons
Contractor's personnel: About 250 persons
HSE personnel: About 250 persons

الطاقة البشرية الكلية: 3000 عامل تقريباً
العاملين بشركة جاسكو: 2750 عامل تقريباً
عمالة المقاول: 250 عامل تقريباً
العاملين بمجال السلامة والبيئة: 250 عامل تقريباً

Contact Guide

دليل الاتصال

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Fax:

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العنوان:
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149

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26171512- 26171511 – 26171510
تليفون الطوارئ:
149

Key persons:

السادة المديرين الإقليميين

Magdy Galal **WDGC Mgr**
Gmal ELgzar **LPG Mgr**
Nagdy Elmenshawy **Northern Region Mgr**
Mohammed Morgan **Eastern Region Mgr**
Mahmoud Abdelazez **Great Cairo Region Mgr**

مدير عام مجمع غازات الصحراء الغربية
مدير عام مصنع استخلاص البوتاجاز بالعامرية
مدير عام أقليمي المنطقة الشمالية
مدير عام أقليمي المنطقة الشرقية
مدير عام أقليمي منطقة القاهرة الكبرى
د.م مجدي جلال
م. جمال الجزار
م. حمدي رخا
م. منير الرباط
م. رأفت البني

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	35	92



HSE Management System

GASCO-HSE-M

نظام إدارة السلامة والصحة المهنية والبيئة

HSE Management System Manual

دليل نظام إدارة السلامة والصحة المهنية والبيئة

ISO 14001 CERTIFICATION



ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	36	92



HSE Management System

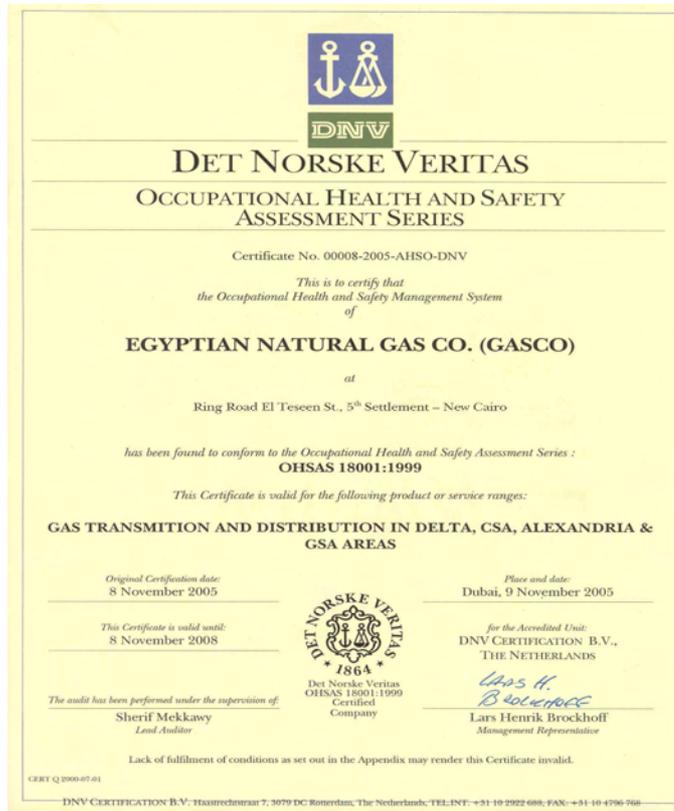
GASCO-HSE-M

نظام إدارة السلامة والصحة المهنية والبيئة

HSE Management System Manual

دليل نظام إدارة السلامة والصحة المهنية والبيئة

OHSAS 18001 CERTIFICATION



ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	37	92

	<h2 style="text-align: center;">HSE Management System</h2> <p style="text-align: center;">نظام إدارة السلامة والصحة المهنية والبيئة</p>	<p style="text-align: center;">GASCO-HSE-M</p>
<h2 style="text-align: center;">HSE Management System Manual</h2> <p style="text-align: center;">دليل نظام إدارة السلامة والصحة المهنية والبيئة</p>		

2- GASCO HSE Policy:-

GASCO HSE policy will be reviewed annually;



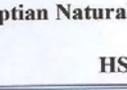
Egyptian Natural Gas Co.
الشركة المصرية للغازات الطبيعية



ISO 14001 REGISTERED
DNV



HSE MGMT. SYS
HVA C-175
DNV



Egyptian Natural Gas Company (GASCO)

HSE POLICY

GASCO works in the field of natural gas transmission, distribution and processing, is aligning its business practices and principles by committing to excellence in the health, safety and environmental performance of our employees, customers, and communities through strict adherence to standards providing a safe workplace for our employees and preserve the environment of the community surrounding our facilities. In accordance with these goals, the **GASCO HSE Management will :-**

- **Meet the Applicable HSE Laws**, legislations, regulations, international codes and standards to which **GASCO** is subjected while performing our obligations and taking measures to demonstrate that the policies are being implemented in practice.
- **Identify HSE Hazards** arising from our activities, evaluate & control risks in the implementation of necessary control measures in order to prevent and/or minimize accidents, incidents, injuries, and other risks and aspects to the lowest practical levels through using the best available technology, safe mode of operation and enhancing preparedness to contingencies.
- **Maintain an Incident Reporting System** that allows analysis of losses or potential losses and facilitates dissemination of the recommendations to prevent recurrence across the company.
- **Control Pollution**, bringing it to a minimum, through the application of the relevant HSE management system that leads to the prevention of negative impact .
- **Adopt** the safe modern technologies and successful experiences for our waste management system.
- **Establishing a Framework** for regular review of HSE objectives & targets.
- **Continual Improvement** of our performance-based occupational health, safety and environment management systems is the responsibility of everyone.
- **GASCO will Periodically Review** and communicate it to all employees, and make it available to the public.

HSE Gen. Manager



Chem. Mustafa A. El Makarem

Chairman and Managing Director



Eng. Yehia EL- Ridy

3th issue

20/5/2005

1/1

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	38	92

2- سياسة السلامة والصحة المهنية وحماية البيئة بجاسكو : تتم مراجعة سياسة السلامة والصحة المهنية وحماية البيئة بجاسكو سنوياً



الشركة المصرية للغازات الطبيعية



ISO 14001 REGISTERED



DNV REGISTERED FIRM

الشركة المصرية للغازات الطبيعية (جاسكو)

سياسة السلامة والصحة المهنية وحماية البيئة

جاسكو

شركة رائدة تعمل في مجال نقل وتوزيع ومعالجة الغاز الطبيعي وتهدف توجهاتها إلى رفع الأداء فيما يخص السلامة والصحة المهنية وحماية البيئة للعاملين بها و عملائها وذلك من خلال الالتزام بالأكواد الخاصة بتأمين بيئة العمل وحماية العاملين و البيئة المحيطة بمجال نشاط الشركة.

وإنطلاقاً من هذه التوجهات فإن شركة **جاسكو** تلتزم في تطبيق نظام إدارة السلامة والصحة المهنية وحماية البيئة بما يلي :-

- التوافق مع القوانين و التشريعات والأكواد العالمية المتعلقة بنشاط **جاسكو** والمختصة بالسلامة والصحة المهنية وحماية البيئة مع إتخاذ الإجراءات اللازمة لتطبيق هذه السياسة عملياً.
- التعرف على المخاطر الناشئة عن أنشطة **جاسكو** وتقييمها ووضع السبل اللازمة للتحكم فيها بهدف منع و/أو تقليل الحوادث و الإصابات و المؤثرات و المخاطر الأخرى للحد الأدنى عملياً من خلال إتباع أفضل الوسائل التكنولوجية المتاحة والطرق الآمنة في التشغيل و النهوض بمستوى استعدادات الطوارئ.
- تطبيق ومتابعة نظام الإبلاغ عن الحوادث و المخاطر الكامنة والذي يسمح بتحليل الخسائر الكلية أو الجزئية مما يوفر السبل لوضع الاشتراطات اللازمة لمنع تكرارها.
- الحد من التلوث من خلال تطبيق نظام إدارة السلامة والصحة المهنية وحماية البيئة مما يؤدي لمنع التأثيرات السلبية التي قد تنتج عنه.
- إتباع أفضل الوسائل التكنولوجية المتاحة والطرق الآمنة في نظام إدارة المخلفات.
- وضع الإطار العام لمراجعة أهداف وبرامج السلامة والصحة المهنية وحماية البيئة.
- التحسين المستمر في أداء أنظمة السلامة والصحة المهنية وحماية البيئة من خلال ترسيخ مبدأ أن السلامة مسئولية الجميع.
- تقوم جاسكو بالمراجعة الدورية لسياسة السلامة والصحة المهنية وحماية البيئة كما تقوم بإبلاغها لجميع العاملين وتتعهد بأن تكون متاحة للعامة.

رئيس مجلس الإدارة والعصم المنتخب



م. / يحيى الريدي

مدير عام السلامة والصحة المهنية وحماية البيئة



ك. / مصطفى أبو المكارم

٢٠٠٧/٥/٢٠

الإصدار الثالث

1/1

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	39	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

3 – Planning

(ISO 14001/4.3 & OHSAS 18001/4.3)

• Egyptian Natural Gas Company (GASCO) for HSE control through identification of environmental aspects, identification and evaluation of risks, establishing a risk control method, identification of legal and other HSE requirements, setting objectives and targets and then, establishing a program for achievements.

3-1A Environmental Aspects

(ISO 14001/4.3.1)

- Cooperation between HSE G. Dept. and other departments to identify the environmental aspects of each activity and operation that have or can have significant environmental impacts.
- Departments can technically analyze the operations and HSE Division provides preparation, guidance, and review of results.
- An aspects list is maintained at each Division and the HSE Division maintains a master list. These lists determine and classify each aspect and are updated continuously when starting up a new activity or modifying an existing one.
- Significant aspects are taken into consideration when setting environmental objectives and targets.
- Environmental aspects are identified and controlled according to procedure # (GASCO-HSE-P-001).

التخطيط:

(ISO 14001/4.3 & OHSAS 18001/4.3)

إن الشركة المصرية للغازات الطبيعية (جاسكو) تتحكم في السلامة والصحة المهنية والبيئة من خلال التعرف على المؤثرات البيئية الناتجة من أنشطة جاسكو، تعريف وتقييم المخاطر ووضع الطرق اللازمة للتحكم في هذه المخاطر، التعرف على القوانين والتشريعات والمتطلبات الخاصة بالسلامة والصحة المهنية والبيئة ووضع الاهداف العامة والدقيقة وبعد ذلك وضع البرامج الخاصة للوصول لهذه الاهداف.

3-1-3 أ- المؤثرات البيئية

(ISO 14001/4.3.1)

- ان التعاون بين الإدارة العامة للسلامة والصحة المهنية وحماية البيئة والإدارات الأخرى يهدف الى التوصل لمعرفة اعناصر البيئية الأساسية لكل نشاط أو عملية من الممكن أن يكون لها تأثيرات هامة على البيئة.
- ان الإدارات تستطيع تحليل العمليات من الناحية العملية تقوم إدارة السلامة والصحة المهنية والبيئة بامدادهم بالمتطلبات الأساسية والإرشاد ومراجعة النتائج.
- يتم حفظ قائمة بالمؤثرات البيئية عند كل قسم وتحفظ قائمة رئيسية عند إدارة السلامة والصحة المهنية وحماية البيئة، هذه القوائم تصنف المؤثرات البيئية وتقيمها، ويتم عمل تحديث لها باستمرار عندما يتم البدء في نشاط جديد أو تطوير نشاط موجود بالفعل.
- العناصر الهامة يتم أخذها في الاعتبار عند وضع الاهداف البيئية العامة والدقيقة.
- يتم التعرف وضبط العناصر البيئية من خلال الاجراء (GASCO-HSE-P-001).

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	40	92

 <p>Egyptian Natural Gas Co. الشركة المصرية للغازات الطبيعية</p>	<p>HSE Management System</p> <p>نظام إدارة السلامة والصحة المهنية والبيئة</p>	<p>GASCO-HSE-M</p>
<p>HSE Management System Manual</p> <p>دليل نظام إدارة السلامة والصحة المهنية والبيئة</p>		

3-1B Hazard identification, risk assessment and risk control

(OHSAS 18001/4.3.1)

1-3-ب تعريف المخاطر وتقييم المخاطر والتحكم فيها:
(OHSAS 18001/4.3.1)

- وفقاً لإجراء GASCO-HSE-P-015, GASCO will identify hazard relevant to all activities which conducted and / or may implemented in the plant /area, then asset risks associated to these hazards, finally set the control measures required to control these risks.
- The department /contractor which need to carry any job will notify the plant /area /headquarters HSE manager which will asset the job and decide if it is enough to issue the work permit or it is necessary to analyze the task by using the risk assessment methodology according to the previous frequency, serious of accidents, new jobs and change in procedures.
- Just it is decided that the job needs further analysis, HSE responsible in area/ plant/ site/ headquarters will appoint a team to carry out the job hazard analysis and risk assessment.
- The team will identify hazard effect on people; assets, reputation, and environment, then estimate severity rating and probability rating by using the company matrix and set control measures.
- The team will asset the residual risk and finally decides if this residual risk is trivial, tolerable or intolerable according to the company matrix.
- وفقاً لإجراء GASCO-HSE-P-015, تقوم جاسكو بتعريف المخاطر تبعاً لكل الأنشطة التي تديرها و/ أو تنفذ في المنطقة أو المصنع وبعد ذلك تقييم الخطورة على أساس مدى خطورة هذه المخاطر وفي النهاية تضع وسائل للتحكم في هذه المخاطر.
- يجب عند تنفيذ أي أعمال خاصة بإدارة /مقاوم إبلاغ إدارة السلامة والصحة المهنية وحماية البيئة بالمصنع/ المنطقة / المركز الرئيسي والذي سوف يقوم بتقييم العمل ويقدر إذا كان إصدار تصريح عمل كافي أو من الضروري عمل تحليل مخاطر للعمل باستخدام تقييم المخاطر المنهجي تبعاً للتكرارية السابقاً, خطورة الحوادث, الأعمال الجديدة والتغييرات في الإجراءات.
- إذا ما تقرر أن العمل يحتاج إلى تحليل أكثر, يقوم مدير السلامة والصحة المهنية وحماية البيئة بالموقع / المصنع / المنطقة / المركز الرئيسي بتحديد مجموعة لتقوم بتحليل المخاطر الخاصة بالعمل وتقييم مدى خطورتها.
- تقوم المجموعة بتعريف المخاطر ومدى تأثيرها على الناس, المنفعة, سمعة الشركة والبيئة بعد ذلك يقوم بحساب الشدة والاحتمالي مستخدماً المصفوفة المعمول بها في الشركة ويقوم بوضع وسائل التحكم.
- تقوم المجموعة بتقييم الخطورة المتبقية وفي النهاية يقرروا إذا كان الخطورة المتبقية خفيفة ومقبولة أو غير مقبولة تبعاً لمصفوفة الشركة.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	41	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

2-3 القوانين والمتطلبات الأخرى:

(ISO 14001/4.3.2 & OHSAS 18001/4.3.2)

3-2 Legal and Other Requirements

(ISO 14001/4.3.2 & OHSAS 18001/4.3.2)

- Legislation, The Egyptian Natural Gas Holding Company (EGAS) instructions, GASCO regulation and technical codes and practices are the sources of HSE obligations in GASCO.
- HSE G. Dept. identifies applicable legal & other obligations for existing environmental aspects and safety risks and also providing all GASCO Districts with EGAS and governmental instructions.
- Administration & Legal affair G. Dept is responsible for providing with currently issues of legislation and other Department are responsible for providing with relevant technical codes.
- The obligation register updating done through coordination between HSE G. Dept, Administrative G. Dept. & Legal affairs G. Dept through "El Wakaie El Masrya"
- HSE G. Dept in coordination with HSE sectors in plants/areas are responsible to keep the applicable standard, which identified in the obligation register up to date by send updating data request annually to NFPA and OSHA.
- Legal & other requirements communicated according to GASCO-HSE-P-002 to cover persons whom working under the control of GASCO

- إن القوانين المصرية ومنشورات الشركة المصرية القابضة للغاز الطبيعي (الإيجاس) ولائحة شركة جاسكو والأكواد والخبرة تكون مصدر التشريعات للسلامة والصحة المهنية والبيئة بشركة جاسكو..
- الإدارة العامة للسلامة والصحة المهنية وحماية البيئة تقوم بتعريف القوانين والتشريعات الأخرى المرتبطة بالتأثيرات البيئية والمخاطر الناتجة عن أنشطة الشركة وكذلك تقوم بحصر قرارات الشركة القابضة للغازات والقرارات الحكومية الخاصة بالسلامة والصحة المهنية وحماية البيئة .
- الإدارة العامة للشؤون الإدارية والإدارة العامة للشؤون القانونية تكون مسؤولة عن الامداد بالاصدارات الدورية للقوانين والتشريعات والادارات الأخرى تكون مسؤولة عن الامداد بالاكواد الفنية المرتبطة بها.
- سجل القوانين يتم تحديثه من خلال التنسيق بين الإدارة العامة للسلامة والصحة المهنية وحماية البيئة والإدارة العامة للشؤون الادارية والإدارة العامة للشؤون القانونية من خلال جريدة " الوقائع المصرية".
- الإدارة العامة للسلامة والصحة المهنية وحماية البيئة بالتعاون مع إدارات السلامة والبيئة بالمنطقة /المصنع تكون مسؤولة عن حفظ وتحديث المقاييس العالمية المدرجة في سجل القوانين سنوياً بمراسلة الـ NFPA& OSHA .
- يتم توزيع القوانين والتشريعات طبقاً والاجراء GASCO-HSE-P-002 للأشخاص والذين يعلموا تحت مظلة التحكم الخاصة بجاسكو .

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	42	92

	HSE Management System نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-M
HSE Management System Manual دليل نظام إدارة السلامة والصحة المهنية والبيئة		

3-3 Objectives and Targets

(ISO 14001 / 4.3.3 & OHSAS 18001 4.3.3)

Each gas plant / area /headquarters establishes its environmental targets to fulfill the GASCO's HSE objectives and realize company commitment to achieve continual improvement

.When establishing and reviewing the objectives/ targets, each site put in consideration:

- Existing significant environmental aspects.
- Existing unacceptable risks.
- The legal and other requirements compliance situation.
- Available technological options.
- Financial resources.
- Operational and business requirements.
- Views of interested parties.
- The attempting for the continual improvement
- Injury, occupational ill health prevention, and also, pollution prevention.

• HSE General Dept. provides guidance in setting and periodically reviewing HSE objectives and targets in all areas / plants / headquarters.

• Each site/ plant Manager reviews and approves HSE objectives and targets in connection with concerned departments, in headquarters this role done through the concerned general department manager .

• HSE objectives and targets are set and established and followed-up according to procedure # (GASCO-HSE-P-003)

3-4 HSE Management Program(s)

(ISO 14001/4.3.3 & OHSAS 18001/4.3.4)

• Each operating department in GASCO is required to establish an initial HSE program to achieve its relative HSE objectives and targets. Such program indicates the following:

- Objectives and targets related to the divisional activities.
- Action plan for achieving each target.
- Responsibilities for achieving each target / action.
- Means of execution.
- Time scaled to finish.

• HSE Dept. documents the programs and periodically follows-up its execution.

• HSE program is timely amended by any new or modified activity.

-

الاهداف العامة والدقيقة:

(ISO 14001 / 4.3.3 & OHSAS 18001 4.3.3)

• كل منطقة/ مصنع/ المركز الرئيسي مسئول عن وضع الاهداف الدقيقة للوصول الى الاهداف العامة للسلامة والصحة المهنية والبيئة وإظهار التزام الشركة للوصول إلى التحسين المستمر .
عند وضع ومراجعة الاهداف العامة والدقيقة, يجب على كل موقع

أن يضع في اعتباره الاتي:

- وجود المؤثرات البيئية التي لها تأثير سلبي.
- وجود المخاطر الغير مقبولة
- موقف مدى التطابق مع القوانين والتشريعات
- مدى توافر الاختيار التكنولوجي.
- الموارد المالية.
- الاحتياجات العملية والتشغيلية.
- رؤية الجهات المعنية.
- محاولة الوصول إلى التحسين المستمر
- الإصابات، الوقاية من الأمراض المهنية وكذلك منع التلوث .

• تقوم الإدارة العامة للسلامة والصحة المهنية وحماية البيئة بمعاونة باقي الإدارات في وضع ومراجعة الاهداف العامة والدقيقة دورياً وذلك بجميع المناطق / المصانع / المركز الرئيسي.

• يكون كل مدير منطقة /مصنع مسئول عن مراجعة وإعتماد الاهداف العامة والدقيقة بالاتصال مع الادارات المعنية وفي المركز الرئيسي يقوم المدير العام للإدارة المصدرة للبرنامج بهذا الدور.

• يتم وضع أهداف السلامة والصحة المهنية والبيئة وتنفيذها ومتابعتها طبقاً والاجراء (GASCO-HSE-P-003).

البرامج الخاصة بأهداف إدارة السلامة والصحة المهنية والبيئة:

(ISO 14001/4.3.3 & OHSAS 18001/4.3.4)

• كل إدارة تشغيلية في جاسكو مطلوب منها برنامج لتنفيذ أهداف السلامة والصحة المهنية والبيئة الموضوعه.

• هذه البرامج توضح الاتي:

- الاهداف العامة والدقيقة لكل نشاط بقطاع معين.
- الخطة الفعلية للوصول الى كل هدف خاص.
- المسؤوليات لتحقيق كل هدف خاص
- طرق التنفيذ.
- الوقت المحدد للانتهاء من الهدف.
- تقوم ادارة السلامة والصحة المهنية وحماية البيئة بتوثيق البرامج الخاصة بكل إدارة ويتم مراجعته تنفيذه دورياً.
- يتم تغيير برنامج إدارة السلامة والصحة المهنية وحماية البيئة دورياً في حالة وجود نشاط جديد أو معدل.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	43	92

4- Implementation And Operation

(ISO 14001/4.4 & ISO 18001/4.4)

4-1 Structure And Responsibility

(ISO 14001/4.4.1 & ISO 18001/4.4.1)

• Each site HSE Dept. is designated as the focal point responsible for HSE management within each site/ areas /plants activities.

• Chem. Mustafa Abu El Makarem is the HSE Management Representative and the OH&S Management appointee according to decree 1/2005 & 166/2005 and he is responsible & authorized for:

1. Ensuring that HSE management system is well established implemented and maintained in accordance with ISO 14001 & OHSAS 18001 requirements.

2. Reporting on performance of the HSE management system to the company top management.

• Chem. Mustafa Abu El Makarem delegates the regional managers & plant managers to act on behalf of him to be an HSE_MR to: -

1. Ensure that HSE management system is well established, implemented and maintained in accordance with ISO 14001 & OHSAS 18001 requirements.

2. Report on performance of the HSE management system to him.

• GASCO's management in general and management representative in particular are responsible and have the authority for establishing, maintaining, and verifying the effective implementation of the HSE Management System in coordination with HSE Management Representative.

• Areas/ plants and general departments in the headquarters managers are

4- التطبيق

(ISO 14001/4.4.1 & ISO 18001/4.4.1)

1-4 الأدوار والمسئوليات

(ISO 14001/4.4.1 & ISO 18001/4.4.1)

• يعتبر كل إدارات السلامة والبيئة بمختلف المواقع المناطق/ المصانع بجاسكو مسئوله عن إدارة أعمال السلامة وحماية البيئة في الموقع التابع له وكذلك تفعيل نظام السلامة بالمواقع

• الكيميائي مصطفى أبو المكارم هو ممثل الإدارة العليا والمشرف على إدارة جميع أعمال السلامة والصحة المهنية وحماية البيئة بالشركة طبقا والقرار رقم 1/ 2005 و166/2005 وكذلك هو المسئول عن:-

1- التأكد من أن نظام إدارة السلامة وحماية البيئة مطبق تطبيقا كاملا حسب متطلبات الأيزو 14001 وكذلك OHSAS 18001.

2- يقدم للإدارة العليا للشركة تقريرا عن حالة نظام السلامة وحماية البيئة ومدى تطبيقه في الشركة

• فوض الكيميائي مصطفى أبو المكارم المديرين العموم للمصانع والمديرين الإقليميين للمناطق للنيابة عنه كممثل للإدارة العليا في الآتي:

1-التأكد من أن نظام إدارة السلامة وحماية البيئة مطبق تطبيقا كاملا حسب متطلبات الأيزو 14001 وكذلك OHSAS 18001

2- يقدم له تقريرا عن حالة نظام السلامة وحماية البيئة ومدى تطبيقه في كل منطقة.

• الإدارة العليا عموما وممثلها خاصة مسئولين ولديهم كافة الصلاحيات لتطبيق نظام إدارة السلامة وحماية البيئة وتطويره ومراقبة مدى فاعليته بالتنسيق مع ممثل الإدارة العليا.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	43	92

responsible for job assignment within their divisions, and monitoring the work execution regarding the HSE policy and objectives.

- Every manager is responsible to notify his co-workers about HSE related instructions for the purpose of insuring the optimal performance of their works and commitment to the HSE policy.
- Job descriptions have been established within the company including role responsibilities & authorities of workers and their assignments.
- Administration Dept. maintains such descriptions and an HSE management system responsibility matrix is annexed with this manual.
- GASCO applies sufficient resources (human, technological, and financial) to effectively implement its HSE management system. These resources are reviewed and audited regularly by GASCO Top Management Representative (appointee)

4-2 Training, Awareness, And Competence

(ISO 14001/4.4.2 & OHSAS 18001/4.4.2)

- This procedure aims to develop & implement HSE training for all persons working under GASCO control to cover the required HSE training needs (raising the level of awareness and knowledge / skills / behaviors), so that they can carry out their roles and responsibilities to the HSE_MS efficiency and also required to improve their HSE performance, taking into account that this is the highest quality and lower cost.

- مديري المناطق/ المصانع/ الإدارات العامة بالمركز الرئيسي مسئولين عن الأعمال الواقعة في نطاق مواقعهم متضمنا الإشراف على تطبيق الأعمال حسب السياسة العامة للسلامة والصحة المهنية وحماية البيئة بالشركة والأهداف الموضوعية لتحقيقها في ضوءها
- كل مدير مسئول عن إبلاغ العاملين التابعين له تعليمات السلامة والصحة المهنية وحماية البيئة وذلك للتأكد من الكفاءة العالية والتطابق مع سياسة السلامة والصحة المهنية وحماية البيئة.
- تم توصيف طبيعة ومسئوليات العمل وكذلك الصلاحيات الممنوحة لكل من العاملين بالشركة طبقا ودوره المطلوب منه في العمل
- الإدارة العامة للشئون الإدارية تشرف على الحفاظ على هذا التوصيف بحيث يبقى موافقا لنظام الشركة
- تقوم جاسكو بتوفير الإمكانيات والموارد الكافية والملائمة لتطبيق نظام السلامة والصحة المهنية وحماية البيئة (بشرية وفنية ومالية) وهذه الموارد يتم مراجعتها دوريا من ممثل الإدارة العليا.

2- التدريب والتوعية والكفاءة

(ISO 14001/4.4.2 & OHSAS 18001/4.4.2)

يهدف هذا الإجراء إلى إعداد وتنفيذ التدريب للعاملين حت مظلة التحكم الخاصة بالشركة فيما يخص السلامة والصحة المهنية وحماية البيئة بما يغطي الاحتياجات التدريبية المطلوبة (رفع مستوى الوعي والمعارف / المهارات / السلوكيات) و ذلك حتى يتسنى لهم القيام بأدوارهم ومسئولياتهم تجاه نظام إدارة السلامة والصحة المهنية و البيئة بالكفاءة المطلوبة و أيضاً لتحسين أدائهم تجاه السلامة والصحة المهنية و البيئة أخذين في الاعتبار أن يتم ذلك بأعلى جودة وأقل تكلفة. يبدأ هذا الإجراء من تحديد الاحتياجات التدريبية للعاملين فيما يخص السلامة والصحة المهنية وحماية

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	44	92

- This procedure begins to identify the training needs of workers with respect to HSE and ends with the implementation of the training required and to end settlement financial data archiving own, this procedure includes the area of all workers in the company's sites (areas / plants / headquarters) who perform the activities / services that may result in significant environmental impact or OH&S risk or any property damage, It also includes the area of action and awareness labor contractor working in the company's sites (areas/plants/ headquarters) risks and environmental effects that may result from any activities / services performed and the control measures used to reduce that.
- System takes into account different levels of responsibility, ability, literacy of employees and whose work may create a significant impact or adverse risk
- GASCO provide for all employees "included contractors" attend orientation, which Includes - and not limited - as per needed:
 - ✓ **The importance to conformance to HSE policy, objectives & targets and HSE Management System procedures.**
 - ✓ **The requirements of HSE Management System and their roles / responsibilities in its implementation to achieve conformance to HSE policy.**
 - ✓ **The significant environmental aspects and OH&S consequences, actual or potential, and its impact which resulted from and/or associated with their work activities.**
 - ✓ **The HSE benefits of improved personal performance.**
 - ✓ **The potential consequences of departure from specified procedures.**
 - ✓ **The emergency preparedness and response requirements and their roles / responsibilities in emergency plans**

البيئة وينتهي بتنفيذ التدريب المطلوب وإنهاء التسوية المالية وحفظ البيانات الخاصة به.

يشمل مجال هذا الإجراء جميع العاملين في مواقع الشركة (مناطق / مصانع / المركز الرئيسي) الذين يؤدون أعمال / أنشطة / خدمات قد ينتج عنها مؤثرات بيئية هامة أو تأثير على السلامة والصحة المهنية أو خسائر من أي نوع .

كما يشمل مجال الإجراء توعية عمالة المقاول والتي تعمل في مواقع الشركة (مناطق / مصانع / المركز الرئيسي) بالمخاطر والمؤثرات البيئية التي قد تنجم عن أي أعمال / أنشطة / خدمات يؤدونها والأساليب المتبعة للحد منها والسيطرة عليها .

يأخذ نظام إدارة السلامة و الصحة المهنية والبيئة في الاعتبار عند وضع البرامج التدريبية اختلاف مستوى المسؤوليات و القدرات و الإمكانيات الشخصية و مستوى التأهيل للعاملين.

يأخذ نظام إدارة السلامة و الصحة المهنية و حماية البيئة في الاعتبار عند وضع البرامج التدريبية للعاملين الذين يؤدون أعمالاً قد ينتج عنها تأثير بيئي هام أو مخاطر على السلامة و الصحة المهنية .

تقوم شركة جاسكو بتوعية العاملين لديها " بما فيهم من عمالة المقاول" على البرامج التالية -على سبيل المثال وليس الحصر- طبقاً و الاحتياج :-

- ✓ أهمية سياسة الشركة و أهدافها فيما يتعلق بالسلامة و الصحة المهنية و حماية البيئة و إجراءات نظام إدارة السلامة و الصحة المهنية و حماية البيئة .
- ✓ متطلبات نظام إدارة السلامة و الصحة المهنية و البيئة و أدوار و مسؤوليات العاملين في تطبيقه بهدف تحقيق سياسة الشركة تجاه السلامة و الصحة المهنية و حماية البيئة.
- ✓ المؤثرات البيئية الهامة و المخاطر المتعلقة بالسلامة و الصحة المهنية و التي تنتج عن أو/ و ترتبط بالأنشطة و الأعمال التي يقومون بتأديتها سواء كانت حقيقية أو محتملة الحدوث و تأثيرها على السلامة و الصحة المهنية و البيئة.
- ✓ الفوائد المترتبة على تحسين أداء العاملين تجاه السلامة و الصحة المهنية و حماية البيئة.
- ✓ المخاطر المحتملة عن الحيود عن الإجراءات المحددة للعمل.
- ✓ متطلبات خطط الاستعداد لحالات الطوارئ و دور العاملين فيها .

- عند ظهور حالات عدم مطابقة كثيفة أو مشاكل

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	45	92

HSE Management System Manual

دليل نظام إدارة السلامة والصحة المهنية والبيئة

- When excessive non conformance or HSE problem occur illustrate the lack of awareness, training is provided for employees to cover those points.

- Special training programs, environmental aspects identification & evaluation and job hazard analysis and risk assessment teams members had been received internal/external training on environmental aspects identification & evaluation job hazard analysis and risk assessment techniques to be have the competence to do this job

- HSE Management System internal auditors receive training to be certified auditors in ISO 14001, OHSAS 18001 standards and auditing techniques in by specialist companies (certified ones).

- We can depend on the employees whom take special tanning internally on the auditing techniques to be assistant in internal audit with certified auditor at several times before take audit as a task work.

- Each department heads ensure that their employees are received all necessary training courses & provide on - job training to them by using the tool-box talking form

-We will depend on the procedure steps which are counted in training procedure GASCO - TRAIN-1 item No. (5), with respect to "compile programs available training-preparation catalog-catalog preparing training programs - collecting requirements-training review training needs - adoption training to employees-

متعلقة بنقص التدريب لدى العاملين يتم توفير تدريب للعاملين لتغطية هذه الحالات وتلافى حدوثها في المستقبل .

- يؤخذ في الاعتبار في تنفيذ برامج التدريب التخصصية تدريب أعضاء فرق تقييم المؤثرات البيئية تحليل وتقييم مخاطر العمل تدريباً داخلياً أو خارجياً في الشركة على أساليب وتقنيات تحليل وتقييم المؤثرات البيئية ومخاطر العمل بشكل جيد حتى يتسنى لهم القيام بذلك بكفاءة.

- يتم تدريب المراجعين الداخليين لنظام إدارة السلامة والصحة المهنية وحماية البيئة ذوي الكفاءة ليصبحوا معتمدين كمراجعين على متطلبات مواصفة الأيزو 14001 و الأوساس 18001 و أساليب و طرق المراجعة و يقوم بهذا التدريب شركات متخصصة معتمدة .

- يمكن الاعتماد على الأشخاص الذين تلقوا تدريباً داخلياً على تقنيات المراجعة كمساعدين مع المراجعين المعتمدين لعدة مرات قبل إسناد أعمال المراجعة إليهم

- كل مديرين الإدارات مسئولين عن التأكد أن موظفيهم تلقوا كل ما يلزم من دورات تدريبية بما فيها التدريب أثناء العمل لهم عن طريق استخدام نموذج ال- tool-box talking

- يتم الاعتماد في خطوات إجراء العمل بهذه الوثيقة على الخطوات الواردة بإجراء تدريب العاملين بالشركة GASCO-TRAIN-1 بند رقم (5) وذلك فيما يخص " تجميع البرامج التدريب المتاحة - إعداد كتالوج - إعداد كتالوج البرامج التدريبية - تجميع الاحتياجات التدريبية - مراجعة الاحتياجات التدريبية- اعتماد التدريب للعاملين- تنفيذ التدريب- الانتظام والتدريب - تسوية المطالبات المالية - موازنة التدريب - إعداد التقارير

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	46	92

implementation-training attendance
and training-settlement of financial
claims-balancing training-reporting "

4.3 Communication and Consultation

(ISO 14001 / 4.4.3 & OHSAS 18001 /
4.4.3)

- The purpose procedure # GASCO-HSE-005 is to ensure effective and timely communication of HSE related information within GASCO organization and also with external interested parties.

- This procedure describes processes for internal communications including HSE policy, objectives and targets. It can be used for employee reporting of health & safety hazards, or for other related purposes.

- All managers are responsible for communicating policies; objectives, targets, procedures & performance & all employees are responsible for reporting hazards.

- Departments Gen. Mgrs' and areas/plants managers in coordination with HSE General Manager are responsible for reviewing, responding and distributing the external receives to concerned parties.

- HSE committee - include employees representatives - is responsible the following:**

- Involvement in the development and review policies and procedures to manage risk;

- Representation on HSE matters.

- Appropriate involvement in hazard identification, risk assessments and

3-4 الاتصالات والاستشارات

(ISO 14001 / 4.4.3 & OHSAS 18001 /
4.4.3)

- الغرض من إجراء العمل رقم GASCO-HSE-005 هو التأكد من كفاءة وسرعة الاتصالات لتوصيل المسائل المتعلقة بالسلامة والصحة المهنية وحماية البيئة داخل إدارات الشركة وكذلك خارجيا

- هذا الإجراء يشرح العمليات المتعلقة بالاتصالات الداخلية لتوصيل مسائل السلامة والصحة المهنية وحماية البيئة متضمنا السياسة الخاصة بالسلامة والصحة المهنية وحماية البيئة والأهداف الموضوعية لتحقيقها ويمكن أن يستعمل هذا الإجراء في الإبلاغ عن أي أخطار أو مصادر تلوث بيئي أو أي أشياء أخرى تخص السلامة والصحة المهنية وحماية البيئة.

- كل المديرين مسئولين عن توصيل السياسات والأهداف والإجراءات وكذلك كفاءة عمل النظام وعلى جميع العاملين الإبلاغ عن أي أخطار.

- مديرين العموم بالشركة بالتنسيق مع مدير عام السلامة ومديري المناطق/ المصانع مسئولين عن مراجعة الرد وتوزيع ما يصل إليهم من اتصالات خارجية

- لجنة السلامة والصحة المهنية حماية البيئة و المتضمنة ممثلي العاملين مسنولة عما يلي:-**

- المشاركة في مراجعة وتطوير السياسات والإجراءات لتقليل المخاطر.

- توضيح الموضوعات الرئيسية الخاصة بالسلامة والبيئة

- المشاركة بفعالية في أعمال التعريف بالمخاطر وتقييمها وتحديد وسائل الضبط المناسبة

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	47	92

determination of controls;

- Involvement in the development and review of HSE policies, procedures and objectives;

- Consulted where there are any changes that affect on the work place HSE.

• The employees representatives are responsible for communicate the result of HSE committee to their employees.

• **Major topics of internal communication include:**

- HSE policy, objectives and targets:

- HSE management roles and responsibilities;

- Organization performance compared to HSE objectives and targets;

- HSE procedures;

- Results of accidents investigations and,

- Hazards and emergency situations.

• Departments Gen. Mgrs' and areas/plants managers in coordination with HSE General Manager are responsible for reviewing, responding and distributing the external receives to concerned parties, and **these communication will:**

- Be maintained as a HSE record

- Be understandable & adequately explained to the recipient(s).

- Present an accurate and verifiable picture of GASCO and its HSE Management System and the performance of it.

• Employees involvement and consultation arrangement done through activation of near miss report GASCO-HSE-F-010 and employee consulted at any changes affect work place occupational health and safety through

المشاركة في تطوير سياسة وإجراءات وأهداف البيئة والسلامة.

يتم استثمارتها عند وجود أي تغييرات سوف تؤثر على مستوى السلامة والصحة المهنية وحماية البيئة في مواقع العمل المختلفة.

ممثلي العاملين مسئولين عن إبلاغ قرارات ونتائج مناقشات اللجنة لجميع العاملين

المواضيع الرئيسية في الاتصالات الداخلية تتضمن:-

- سياسة السلامة والصحة المهنية وحماية البيئة والأهداف الموضوعية للتحقيق في ظل هذه السياسة.

- الأدوار والمسئوليات وقواعد نظام إدارة السلامة والصحة المهنية وحماية البيئة

- مستوى الأداء والتحقيق للأهداف مقارنة بما تم التخطيط له.

- إجراءات السلامة والصحة المهنية وحماية البيئة.

- نتائج تحقيقات الحوادث والدروس المستفادة منها.

- الأخطار وحالات الطوارئ.

• مديرين العموم بالشركة بالتنسيق مع مدير عام السلامة ومديري المناطق/ المصانع مسئولين عن مراجعة الرد وتوزيع ما يصل إليهم من اتصالات خارجية

• وهذه الاتصالات ستكون :-

- محفوظة في سجلات.

- مفهومة ومشروحة بشكل جيدا للمستقبلين.

- تقدم صورة دقيقة عن شركة جاسكو وعن مستوى الأداء في نظام السلامة والصحة المهنية وحماية البيئة الخاص بالشركة.

• مشاركة العاملين في النظام واستشارتهم فيه سيتم وفقا للأجراء رقم GASCO-HSE-F-010 وسيتم استشارة العاملين في أي تغيير مؤثر في نظام إدارة السلامة والصحة المهنية وحماية البيئة وذلك من خلال استخدام النموذج رقم (GASCO-HSE-F-038) أو من خلال ممثلي

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	48	92

employee questioner form GASCO-HSE-F-038 or through employee representatives in safety committees and HSE Mgr. is responsible to reviewed and evaluate these questioners and send this evaluation to HSE General Mgr.

- Any decree of appointed a management representative (appointee) must be hanged on the administration board to inform all employees.

- The selection of the most appropriate mechanism(s) used for internal communication is left to the discretion of the responsible manager.

- **Mechanisms that are used for various types of communications include, but are not limited to:**

- "All employee" meetings,
- Daily staff meetings,
- Work Place procedures,
- Bulletin boards and posters,
- Memorandums and employee letters,
- Newsletters, and
- HSE Forums

- All employees are responsible for reporting HSE hazards to their HSE Dept. to survey the location of the hazard with the assigned technical supervisor, and HSE Manager is responsible to communicate HSE G. M. with the result of this survey.

- All employees are responsible for notifying control room and/or operator immediately upon discovery the emergency cases (as vents, leakage, spills or fires) via communication channels number according to Emergency plane of GASCO's sites.

العاملين باللجان الخاصة بالسلامة (اللجان الفرعية بالمناطق/ المصانع واللجنة الرئيسية بالمركز الرئيسي) ومدير السلامة والبيئة بالموقع مسئول عن مراجعة وتقييم النماذج وإرسال ذلك للسيد مدير عام السلامة والصحة المهنية وحماية البيئة.

- أي قرار بشأن تحديد ممثل الإدارة العليا للسلامة والصحة المهنية وحماية البيئة يتم تعليقه في لوحة الإعلانات بالشركة من أجل إعلام جميع العاملين بالتغيير الذي تم.

- لكل مدير حرية التصرف في اختيار آلية عمل الاتصالات الداخلية حسب ما يترائي له.

- **آلية عمل الاتصالات الداخلية يجب أن تتضمن على الأقل الآتي:-**

- اجتماعات العاملين.
- الاجتماع اليومي للعاملين.
- إجراءات العمل بالموقع.
- لوحة الإعلانات وملصقات التوعية.
- المذكرات الداخلية.
- النشرات الدورية
- نماذج السلامة والصحة المهنية وحماية البيئة.

- على كل العاملين إن يقوموا بالإبلاغ بأي مخاطر تضر بالسلامة والصحة المهنية وحماية البيئة بالشركة إلى إدارة السلامة والصحة المهنية وحماية البيئة حتى تقوم بمعاينة الخطر المبلغ عنه مع المشرف المختص وعلى مسئول السلامة والصحة المهنية وحماية البيئة إن يقوموا بإبلاغ مدير عام السلامة والصحة المهنية وحماية البيئة بنتيجة المعاينة.

- في حالات الطوارئ علي المكتشف الإبلاغ الفوري عنها لغرفة التحكم أو المشغل المختص بمجرد اكتشافها (مثل تسريب شديد للغاز أو حريق أو ما شابه) وذلك عبر استخدام الإجراءات الموجودة في خطة الطوارئ.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	49	92

HSE Management System Manual

دليل نظام إدارة السلامة والصحة المهنية والبيئة

- Inquiries and other communications (received by mail, fax, telephone, or in person) from external parties concerning GASCO's HSE system.
- The HSE. G. M. coordinate with all general departments and areas/ plants managers to determine the appropriate response reviews all external communications.
- GASCO Vice Chairman and departments general managers in coordination with HSE General Manager are delegated to communicate with the representatives of regulatory agencies in HSE subjects.
- Document controller in headquarters maintains records of all such communications (both incoming & outgoing). A brief note about external communications and its follow up is notified to all GASCO sites.
- As mentioned in procedure # (GASCO-HSE-P-016) GASCO HSE G. M. is responsible to notify EGAS and Petroleum Ministry in case of any accident or work related injuries.
- HSE Site/ areas/ plants departments and also HSE General Department in headquarters communicates all HSE monitoring, audits and management review results to other concerned divisions for improvements, motivations, raising awareness, or helping in solving problems.
- HSE Site Mgr. is responsible for define HSE rules and procedures to contractors and visitors prior to the initiation of the work in a pre-job

• المراسلات وأنواع الاتصالات الأخرى ذات الصلة بالسلامة والصحة المهنية وحماية البيئة (الوارد بالبريد الإلكتروني، الفاكس، الاتصال التليفوني أو عن طريق شخص) من الجهات الخارجية تؤخذ في الاعتبار في نظام إدارة السلامة والصحة المهنية حماية البيئة الخاص بجاسكو.

يقوم مدير عام السلامة والصحة المهنية وحماية البيئة بالتنسيق مع باقي المديرين العموم بالشركة والمناطق والمصانع لتحديد الطريقة المثلى للتعامل والرد على الاتصالات الخارجية

• رئيس مجلس الإدارة والسادة مديرين العموم بالتنسيق مع السيد مدير عام السلامة والصحة المهنية وحماية البيئة هم المفوضون للاتصالات مع الجهات الرسمية فيما يخص السلامة والصحة المهنية وحماية البيئة.

• يقوم مراقب الوثائق بالمركز الرئيسي بعمل سجل لحفظ جميع الاتصالات الصادرة والواردة ويتم إبلاغ مواقع جاسكو المختلفة بإيجاز حول موضوع الاتصالات الخارجية

• كما ذكر بالإجراء (GASCO-HSE-P-016) يقوم مدير عام السلامة والصحة المهنية وحماية البيئة بإبلاغ الشركة القابضة للغاز ووزارة البترول في حالات الحوادث أو الإصابات المتعلقة بالعمل.

• تقوم إدارات السلامة والصحة المهنية وحماية البيئة بالمواقع/ المناطق/ المصانع وكذلك الإدارة العامة للسلامة والصحة المهنية وحماية البيئة بالمركز الرئيسي بإبلاغ كل ما يتعلق بنتائج التفتيش والمراجعات لكل الإدارات المعنية (كل فيما يخصه) وذلك لرفع الوعي واتخاذ اللازم اتجاه هذه النتائج.

يعتبر مدير السلامة بالمصنع/ المنطقة مسئول عن التعريف بقواعد وإجراءات السلامة والبيئة للزائرين والمقاولين قبل بداية العمل وذلك في إجتماع السلامة التمهيدي والذي يتم من خلاله شرح وتوضيح الأدوار

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	50	92

HSE Management System Manual

دليل نظام إدارة السلامة والصحة المهنية والبيئة

meeting, as well as a simplified explanation of their roles in emergency cases

- HSE site / project manager shall be insure that the contractors were consulted where there are changes that affect their OH&S

- HSE General Dept. is responsible for publishing HSE annual report that contains information about GASCO HSE performance

4-4 HSE Management System Documentation (ISO 14001 / 4.4.4 & OHSAS 18001 / 4.4.4)

- GASCO has developed and maintains a documented HSE management system designed in accordance with the international standards ISO 14001-2004& OHSAS 18001-1999.

GASCO's HSE management system is illustrated as per the following diagram

في حالات الطوارئ

مدير السلامة بالموقع/ المشروع مسؤول عن التأكد من إستشارة المقاول قبل أى إجراءات تؤثر على وضع السلامة والبيئة الخاصة به .

- مدير عام السلامة والصحة المهنية وحماية البيئة مسئول عن نشر تقرير سنوي بمستوى أداء مختلف إدارات ومواقع الشركة تجاه السلامة والصحة المهنية وحماية البيئة.

4-4 التوثيق في نظام السلامة والصحة المهنية وحماية البيئة (ISO 14001 / 4.4.4 & OHSAS 18001 / 4.4.4)

- وضعت جاسكو نظام توثيق بنظامها للسلامة والصحة المهنية وحماية البيئة متفق و المواصفات العالمية ISO14001-2004& OHSAS18001-1999.
- نظام شركة جاسكو لإدارة السلامة والصحة المهنية وحماية البيئة موضح بالشكل أدناه

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	51	92



HSE Management System

نظام إدارة السلامة والصحة المهنية والبيئة

GASCO-HSE-M

HSE Management System Manual

دليل نظام إدارة السلامة والصحة المهنية والبيئة

HSE Policy

سياسة السلامة والصحة المهنية

Level 1

المستوى الاول

HSE Management System Manual

دليل نظام إدارة السلامة والصحة المهنية وحماية البيئة

Covering ISO 14001 & OHSAS 18001 Requirements

يغطي متطلبات مواصفتي الأيزو 14001 و 18001 OHSAS

Level 2

المستوى الثاني

HSE Procedures

إجراءات السلامة والصحة المهنية وحماية البيئة

Outlining what is done to achieve HSE Policy

يحدد سبل تحقيق سياسة السلامة والصحة المهنية وحماية البيئة

Level 3

المستوى الثالث

Supporting Documents

الوثائق المساعدة

Legislation - Technical codes - International standards -
EGAS instructions - Forms - etc.

التشريعات - الأكواد الفنية - النظم العالمية - تعليمات الشركة القابضة -
النماذج - ... الخ

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	52	92

- The HSE manual contains the basic policies and other general information about the HSE management system.
- The operating procedures describe the overall flow of activities.
- Work instructions are more detailed, activity - specific guidelines.
- Records include all documentation needed to demonstrate compliance with the ISO 14001 & OHSAS 18001 requirements.

4-5 Document Control

(ISO 14001 /4.4.5 & OHSAS 18001 /4.4.5)

- All HSE management system related documents are written on agreed formats.
- Issues and changes of documents done according to the procedure (GASCO-HSE-P-006)
- HSE General Dept. is responsible for controlling HSE management system documents through the following:
 - Ensuring reviewing & approval of documents prior to issue.
 - Ensuring that documents, of current issue, are available at all locations of use.
 - Removal of obsolete documents from areas of intended use.
 - Maintaining a master list that clearly shows the current revision and distribution of each document.

HSE management system documents are controlled through document number; issue ,approval, and

- يحتوي دليل السلامة والصحة المهنية وحماية البيئة على المبادئ الأساسية والمعلومات العامة المتعلقة بنظام إدارة السلامة والصحة المهنية وحماية البيئة.
- إجراءات تفعيل النظام تقوم بشرح جميع الأنشطة الخاصة بالنظام.
- تقوم تعليمات العمل بأمان بشرح كيفية أداء الأعمال والأنشطة داخل الشركة بطريقة آمنة.
- تتوافق جميع السجلات والوثائق داخل نظام شركة جاسكو مع كل من نظام الأيزو 14001 و 18001OHSAS

5-4 إدارة الوثائق

(ISO 14001 /4.4.5 & OHSAS 18001 /4.4.5)

- جميع وثائق النظام يتم كتابتها وتداولها على النماذج المعدة لذلك داخل نظام إدارة السلامة والصحة المهنية و البيئة
- أي تغيير أو إصدار جديد لنموذج يتم طبقاً وما ورد بإجراء التحكم في الوثائق رقم (GASCO-HSE-P-006).
- إدارة الوثائق الخاصة بنظام إدارة السلامة و البيئة بالشركة هي مسئولية الإدارة العامة للسلامة والصحة المهنية وحماية البيئة خلال ما يلي:-
 - التأكد من مراجعة واعتماد الوثائق قبل وضعها قيد الاستخدام
 - التأكد من توزيع الوثائق على جميع الأطراف المعنية.
 - التخلص من الوثائق القديمة غير ذات النفع من كافة مناطق التشغيل.
 - إعداد سجل خاص يوضح آخر إصدار ومناطق توزيع كل وثيقة.

يتم التحكم في وثائق نظام إدارة السلامة والصحة المهنية وحماية البيئة من خلال وضع ترقيم لها،

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	53	92

document distribution record

- The master copies of all the approved documents are maintained at the HSE document and records control center.
- Obsolete documents that are retained for legal or other purposes are identified and maintained separately by document controllers for the period specified.
- Documents are controlled according to procedure # (GASCO-HSE-P-006).

4-6 Operational Control

(ISO 14001 / 4.4.6 & OHSAS 18001 / 4.4.6)

- To identify and control those operations of GASCO activities which have environmental significant impact, potential hazards and/or risks in order to avoid deviation from the HSE policy, objectives and targets.
- GASCO-HSE-P-007 covers situations where their absence could lead to deviations from the HSE policy, objectives and targets as well as aim to implement controls which related to contractor and other visitors to the work place.
- this procedure covers all GASCO activities, operations, services and products in all GASCO sites/ areas/ plants and headquarters.
- Similar environmental aspects, safety potential hazards that have the same characteristics could be controlled in the same manner.
- All departments are responsible for operating this procedure at work.
- **Concerned Departments who communicate with vendors or contractor (Projects/ Support Service/ Contract /**

واعتمادها، وعمل سجل التوزيع الخاص بها.

- يتم حفظ أصول كل الوثائق المصدرة في مركز التحكم في وثائق النظام بالإدارة المركزية للسلامة والصحة المهنية وحماية البيئة
- الوثائق المنتهية غير ذات القيمة يتم الاحتفاظ بها حسب المدة المقررة لها في النظام قبل التخلص منها.

- يتم التحكم في الوثائق حسب ما جاء في الإجراء رقم (GASCO-HSE-P-006)

6-4 التحكم في التشغيل

(ISO 14001 / 4.4.6 & OHSAS 18001 / 4.4.6)

- هذا البند معني بتعريف والتحكم في العمليات التي تتم داخل أنشطة جاسكو المختلفة والتي لها تأثيرات بيئية أو مخاطر كامنة أو أخطار وذلك لمنع وجود أي حيود عن سياسة السلامة والصحة المهنية وحماية البيئة بالشركة أو الأهداف الموضوعه للتحقيق في ظلها.
- يغطي الإجراء رقم GASCO-HSE-P-007 المواقف التي بغيابها قد يحدث حيود عن سياسة السلامة والصحة المهنية وحماية البيئة بالشركة أو الأهداف الموضوعه للتحقيق في ظلها كما يهدف إلى تطبيق إجراءات التحكم ذات الصلة بالمقاولين والزائرين للموقع .
- يغطي هذا الإجراء جميع أنشطة وعمليات شركة جاسكو سواء التشغيلية أو الخدمية أو الإنتاجية وذلك بجميع موقع العمل بالمناطق/ المصانع/ المركز الرئيسي.
- التأثيرات البيئية أو الأخطار المتشابهة داخل أنشطة الشركة من الممكن أن يتم التحكم فيها بنفس الطريقة.
- كل الإدارات مسئولة عن تطبيق هذا الإجراء في العمل
- الإدارات المعنية بالتعامل مع الموردين والمقاولين (المشروعات/ الخدمات المساعدة/ العقود/ المهام... الخ) مسئولة عن توصيل متطلبات

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	54	92

Materials...etc) is responsible for communicating HSE requirements to suppliers and contractors. are responsible for checking, measuring & monitoring the operational control.

- HSE G. Dept. is responsible for provide technical support for all sites in GASCO to insure that, all goods, equipment and service purchased and/ or used by the GASCO comply with the applicable HSE standard.

- Activities and operations handled in GASCO sites could be classified into the following types of operations:

- Transportation & Distribution of N.G.
- Gas processing operations.
- Products storage and shipment operations.
- Workshops and maintenance operations.
- Material storage operations.
- Office works.
- Power distribution & motor control.
- Contracted operations
- Employees Transportation operations
- Waste handling and disposal operations
- Quality control through GASCO Labs.
- The supervision on the new pipeline constructions
- Nation grid engineering & upgrading.
- The national grid on line inspection "and also for other companies"

السلامة والصحة المهنية وحماية البيئة لكل الموردين والمقاولين.

الإدارة العامة للسلامة والصحة المهنية وحماية البيئة وقطاعات السلامة والبيئة بالمناطق/ المصانع مسؤولة عن مراجعة وقياس ومراقبة تطبيق هذا الإجراء داخل الموقع.

- الإدارة العامة للسلامة والصحة المهنية وحماية البيئة مسؤولة عن تقديم الدعم الفني لكل الإدارات والمواقع داخل جاسكو للتأكد من/الوصول إلى أن جميع الخامات والمعدات المطلوبة أو المستخدمة بالشركة تخضع لمواصفات السلامة والصحة المهنية وحماية البيئة المطبقة بالشركة.

- الأنشطة والعمليات الموجودة داخل شركة جاسكو يمكن تصنيفها إلى :-

- نقل وتوزيع الغاز الطبيعي.
- عمليات معالجة الغازات.
- تخزين وشحن المنتجات الغازية والبتروولية.
- أعمال الورش والصيانة
- أعمال تخزين الخامات والمعدات
- أعمال مكتبية
- توزيع والتحكم في الطاقة.
- أعمال مقاولين
- عمليات نقل الموظفين
- التخلص من المخلفات
- التحكم في الجودة (من خلال معامل جاسكو)
- عمليات الإشراف على إنشاء الخطوط الجديدة.
- أعمال هندسة وتطوير الشبكة القومية للغاز .
- أعمال فحص الخطوط لدى الشركة ولدى الغير.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	55	92

4-7 Emergency Preparedness And Response

(ISO 14001/4.4.7 & 18001/ 4.4.7)

- Emergency preparedness and response is one of the early priorities of GASCO.
- Health, safety, and environment are integrated to be one trend of concern.
- A contingency plan is prepared for Each of GASCO Sites; such plan demonstrates:
 - Assignment authorities & responsibilities.
 - Communications required in emergency.
 - Procedures and instructions to be followed in emergency.
 - Information about equipment and facilities available on site.
 - Exercise and drills required at each site.
 - Methods of react and measurements needed after emergency.
- In cooperation with each site, HSE G. Dept. is responsible for prepare the emergency response plan:
 - To identify the potential for emergency situations;
 - To respond to such emergency situations
- Emergency procedures and instructions should be reviewed and revised, if necessary, after the occurrence of any accident or emergency situation.
- Practical tests and drills take place periodically to insure adequacy effectiveness of emergency preparedness procedures.
- Emergency preparedness and response are performed as (GASCO-HSE-P-008).

5 - Checking And Corrective Action (ISO14001/4.5 & OHSAS18001/4.5)

5-1 Monitoring And Measurement

(ISO 14001/4.5.1 & OHSAS 18001/4.5.1)

- HSE G. Dept. is responsible for planning to monitor GASCO significant HSE aspects and risks and at each site within a specified period. Once a monitoring plan is achieved, a new one is set regarding the results of the last one.
- Monitoring and measuring results are evaluated by concerned departments for compliance with HSE

7-4 إجراء الاستعداد والاستجابة للطوارئ:

(ISO 14001/4.4 ISO 18001/4.4)

- إن إجراءات الاستعدادات والاستجابة للطوارئ هي أحد أولويات جاسكو.
- إن نظامي إدارة السلامة والصحة المهنية وإدارة البيئة تم دمجهم في نظام واحد ليصبح نظام إدارة السلامة والصحة المهنية والبيئة.
- تم إعداد خطة طوارئ لكل موقع من مواقع جاسكو والتي تستعرض الآتي:
 - ← الأدوار والمسئوليات.
 - ← الاتصال المطلوب في حالة الطوارئ.
 - ← الإجراءات والتعليمات التي يجب إتباعها في حالة الطوارئ.
 - ← المعلومات المطلوبة عن المعدات والتسهيلات المتاحة في الموقع.
 - ← التدريبات والتجارب الوهمية المطلوبة في كل موقع.
 - ← وسائل التفاعل والقياسات المطلوبة بعد حالة الطوارئ.
- يشترك مدير السلامة بالمصنع/ المحطة مع الإدارات المعنية بغرض إعداد خطة الطوارئ على أن تشمل :
 - تحديد حالات الطوارئ المتوقعة
 - كيفية الإستجابة والتعامل مع هذه الحالات
- يجب مراجعة إجراءات وتعليمات الطوارئ عند الحاجة بعد حدوث حادث أو حالة طوارئ.
- يجب أن يتم عمل اختبارات عملية وتجارب وهمية دورياً للتأكد من مدى كفاية فاعلية إجراءات حالات الطوارئ.
- يجب إتباع إجراء العمل الخاصة بالاستعداد والاستجابة لحالات الطوارئ (GASCO-HSE-P-008).

5 – التحقق والأفعال التصحيحية:

(ISO14001/4.5 & OHSAS18001/4.5)

1-5 المراقبة والقياس:

(ISO 14001/4.5.1 & OHSAS 18001/4.5.1)

- إن مدير عام السلامة والصحة المهنية والبيئة مسئول عن وضع خطة لمراقبة المؤثرات البيئية الهامة والمخاطر الناتجة من نشاط جاسكو في كل موقع في مدة زمنية محددة. وفي حالة انتهاء فترة خطة المراقبة يجب وضع خطة جديدة على ضوء عن نتائج الخطة القديمة.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	56	92

objectives and targets and with HSE legislative requirements.

- In addition measuring and monitoring include monitoring the effectiveness of controls environment, occupational health and safety and evaluate company compliance with the legal requirements that are applicable to its OH&S risks and environmental aspects, as part of its commitment to compliance
- The scope of a compliance evaluation can encompass multiple legal requirements. A variety of methods can be used to assess compliance, including processes such as
 - a) Audits,
 - b) Document and/or records review,
 - c) Self inspections,
 - d) Interviews,
 - e) Project or work reviews,
 - f) Routine sample analysis or laboratory test results,
 - g) High management facility tour, and
 - h) Management review.
- Frequency and methodology of evaluation of compliance depend on the followed method from the previous methods
- Deviation of monitoring / measuring results should be reported timely to Management Representative.
- All GASCO activities environmental aspects and safety risks are monitored and measured according to (GASCO-HSE-P-009).

5-2-A Nonconformance and Corrective And Preventive Action (ISO14001/4.5.2 & OHSAS 18001/4.5.2)

- All nonconformance situations resulting from communication, complaints, monitoring and measurement are notified to HSE Manager for investigation with concerned departments.
- All employees are authorized to initiate a corrective or preventive action request to mitigate a recognized HSE nonconformity.

- إن نتائج المراقبة والقياس يتم تقييمها عن طريق الإدارات المعنية للتأكد من توافقتها مع أهداف وقوانين وتشريعات إدارة السلامة والصحة المهنية والبيئة.
- تشمل عمليات المراقبة والقياس أيضاً مراقبة مدى فاعلية وسائل الضبط الخاصة بالسلامة والصحة المهنية وحماية البيئة وكذلك تقييم مدى توافق الشركة مع القوانين المتعلقة بمؤثرات ومخاطر السلامة والصحة المهنية كجزء من رؤية الشركة للإلتزام العام بقوانين السلامة والبيئة
- يتم استخدام العديد من الوسائل لقياس مدى التوافق مع المتطلبات القانونية ومنها :
 - أ) المراجعة الداخلية على نظام إدارة السلامة والبيئة
 - ب) مراجعة الوثائق و/أو نتائج القياسات المسجلة
 - ت) التفتيش الذاتي
 - ث) المقابلات الشخصية
 - ج) مراجعة إجراءات العمل والمشروعات
 - ح) نتائج التحليل الدوري المعملية
 - خ) نتائج تنفيذ الإدارة العليا على مواقع العمل
 - د) نتائج مراجعة الإدارة
- يتم تحديد عدد مرات وطريقة قياس التوافق طبقاً والأسلوب المستخدم من الطرق المذكورة بعاليه .

- أي حيود في نتائج القياس والمراقبة عن النتائج المسموح بها يجب أن تسجل وترفع إلى ممثل إدارة السلامة والصحة المهنية والبيئة.

- إن كل نشاطات جاسكو المؤثرات البيئية والمخاطر يتم مراقبتها وقياسها طبقاً و (GASCO-HSE-P-009).

5-2-1- الأفعال الغير مطابقة والأفعال التصحيحية والوقائية:

(ISO14001/4.5.2 & OHSAS 18001/4.5.2)

- إن كل الأفعال الغير مطابقة الناتجة من الاتصال الشكاوي والقياس والمراقبة يتم تبليغها إلى مدير عام السلامة والصحة المهنية وحماية البيئة لاستقصائها مع الإدارات المعنية.
- إن كل العاملين ممولين في إصدار طلب للأفعال التصحيحية وذلك لتفادي عدم التطابق مع متطلبات نظام إدارة السلامة والصحة المهنية والبيئة

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	57	92

- Handling of nonconformance includes the following actions:
 - Identification of the root cause.
 - Initiation of action plan.
 - Setting up of corrective and / or preventive action.
 - New adopted controls (if needed)
- Results from the nonconformity process are reviewed regularly by HSE Mgr. and reported to HSE G. Mgr. through the internal audit reports.

- Corrective and preventive actions are handled, investigated, and followed up according to (GASCO-HSE-P-010).

5-2-B Accident & Incident Investigations (OHSAS 18001/4.5.2)

- GASCO HSE Management System objective aims to reduce the frequency and severity of HSE accidents/incidents and thereby reduces the personal suffering and material loss sustained.

- This objective requires that company and contractor staff report all HSE incidents and near misses related to our activities.

- All accidents & incidents (including near misses) shall be reported and recorded in the corporate GASCO HSE formats, using (GASCO-HSE-P-016).

- GASCO-HSE-P-016 describes GASCO Accident/Incident Investigation & Reporting to ensure that all staff in GASCO operations or offices is aware of the importance of their responsibilities with respect to the immediate reporting and investigation of all accidents/incidents.

• (GASCO-HSE-P-016) aims to:-

- Achieve a consistent method for formal and reporting investigating incidents.
- Ensure that incidents are investigated thoroughly and the maximum level of learning is extracted from incidents
- Ensure that practical recommendations to prevent

- إن معالجة الفعل الغير متطابق يتضمن الآتي:
 - تعريف السبب الجذري لظهوره.
 - عمل خطة عمل.
 - إنشاء فعل تصحيحي/ وقائي.
 - عمل أنظمة تحكم جديدة (عند اللزوم).

- إن نتائج تفعيل إجراء الأفعال التصحيحية إزاء حالات عدم التطابق يتم مراجعتها بانتظام عن طريق مدير السلامة والصحة المهنية وحماية البيئة بالمنطقة ويتم تبليغها إلى السيد مدير عام السلامة والصحة المهنية وحماية البيئة من خلال تقارير المراجعة الداخلية.

- الأفعال التصحيحية والوقائية تتم معالجتها والتحقيق فيها ومتابعتها طبقاً والإجراء (GASCO-HSE-P-010)

2-5ب إجراء استقصاء الحوادث

(OHSAS 18001/4.5.2)

- إن أهداف نظام إدارة السلامة والصحة المهنية والبيئة تساعد على تخفيض معدل وشدة الحوادث والتلوث البيئي وبالتالي الإقلال من حدة الإصابات وفقدان الموارد المستدامة.

- هذا الهدف يحتاج إلى أن الشركة وعمال المقاول يدونوا ويسجلوا كل الحوادث بخسائر أو بدون خسائر والمتعلقة بالسلامة والصحة المهنية والبيئة والمخاطر الكامنة التي لها علاقة بأنشطتهم.

- كل الحوادث بخسائر أو بدون (من ضمنهم المخاطر الكامنة) يجب أن يسجلوا في النماذج الخاصة بهم مستخدمين الإجراء (GASCO-HSE-P-016).

- إن الإجراء رقم GASCO-HSE-P-016 يشرح ويوضح كيفية عمل استقصاء لحادث وتسجيلها للتأكد من أن كل العاملين في مكاتب وعمليات التشغيل بجاسكو على وعي تام لأهمية أدوارهم في تسجيلهم الفوري والتحقيق في كل الحوادث التي قد ينتج عنها خسائر أو لا ينتج عنها خسائر.

• إن الإجراء (GASCO-HSE-P-016) يهدف إلى:

- الوصول إلى طريقة فعالة لتسجيل وتدوين التحقيق في الحوادث التي قد لا ينتج عنها خسائر.
- التأكد من أن، كل الحوادث تم الاستقصاء فيها وأنه قد تم استخلاص الفائدة القصوى من وقوع الحادث.
- التأكد من اتخاذ وتطبيق جميع الإجراءات العملية التي تضمن عدم تكرار وقوع الحادث.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	58	92

recurrence of the incidents are established and implemented.

• **(GASCO-HSE-P-016) covers:**

- Initial incident reporting.
- Incident evaluation.
- Injury classification.
- Determining whether incidents are 'work related' and 'reportable'

5-3 Records

(ISO 14001 / 4.5.4 & OHSAS 18001/ 4.5.3)

• GASCO maintains its HSE records in order to demonstrate conformance with ISO 14001 & OHSAS 18001 international standards and legal requirements and also for the purposes of HSE performance improvements.

• HSE records are nominated in the HSE management system procedures is the a minimum requirement for the needed records to be kept.

• All departments in sites/ areas/ plants and headquarters make sure that HSE records are legible and retained in such way that they are readily retrievable and in a suitable environment to prevent damage, deterioration, and / or loss.

• Each department is responsible for identifying, collecting, organizing, assessing, maintaining, storing & disposing of HSE records according to (GASCO-HSE-P-011).

5-4 HSE Management System Audit

(ISO14001/4.5.4&OHSAS18001/4.5.4)

• HSE management system audits are performed periodically to verify:

- Compliance of HSE management system and related results with planned arrangements.
- Technical compliance with environmental laws and regulations.
- Effectiveness of GASCO HSE management system.

• Such audits are scheduled according to the HSE importance and status of audited activities.

• **إن إجراء (GASCO-HSE-P-016) تغطي:**

- الإبلاغ المبدئي عن الحوادث أو الحوادث وشيكة الوقوع.
- عمل تقييم للحوادث والذي يشتمل على العواقب المترتبة وتقييم المخاطر الممكنة (الشدة والاحتمالية).
- عمل تقييم للإصابات.
- تحديد إذا ما كان الحادث له علاقة بالعمل وان كان قد تم الإبلاغ عنه.

التحكم في السجلات:

(ISO 14001 / 4.5.4 & OHSAS 18001/ 4.5.3)

• تقوم جاسكو بحفظ السجلات الخاصة بنظام إدارة السلامة والصحة المهنية والبيئة للتأكد من مدى توافقها مع مواصفات الأيزو 14001 و OHSAS 18001 العالمية ومتطلبات القوانين وأيضا من أجل تحسين أداء نظام إدارة السلامة والصحة المهنية والبيئة.

• إن سجلات السلامة والصحة المهنية وحماية البيئة المعرفة في إجراءات نظام إدارة السلامة والصحة المهنية والبيئة هي الحد الأدنى للسجلات المطلوبة.

• تقوم كل الإدارات بجميع مواقع العمل بالمناطق/ المصانع/المركز الرئيسي بالتأكد من أن سجلات نظام إدارة السلامة والصحة المهنية والبيئة مقروءة, ويمكن استعادتها بسهولة ويتم حفظها في بيئة مناسبة لمنع تدميرها , تلفها, أو/ و فقدانها.

• كل إدارة مسؤولة عن تعريف, تجميع, تنظيم, تقييم, حفظ, تخزين, التخلص من سجلات إدارة السلامة والصحة المهنية والبيئة الخاصة بنشاطها طبقاً و (GASCO-HSE-P-011)

4-5 مراجعة نظام إدارة السلامة والصحة المهنية والبيئة

(ISO14001/4.5.4&OHSAS18001/4.5.4)

• تتم عمل مراجعات دورية على نظام إدارة السلامة والصحة المهنية والبيئة للتأكد من:

- مدى توافق نظام إدارة السلامة والصحة والبيئة والنتائج المرتبطة بها مع الترتيبات المخططة.
- التوافق العملي مع قوانين وتشريعات إدارة السلامة والصحة المهنية وحماية البيئة.
- فعالية نظام جاسكو للسلامة والصحة المهنية وحماية البيئة.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	59	92

- A group of trained personnel is available to carry out the internal HSE audits and external parties could be used for technical audits. Personnel who are independent of those related to the activity being audited carry out internal HSE management system audits and the auditors should be impartial and objective.
- HSE General Dept. is responsible for planning and conducting the periodical internal audit on HSE management system audits according to the procedure # (GASCO-HSE-P-013).
- The HSE audit results are recorded and notified to the audited function and corrective actions resulting from such audits are identified, monitored, and completed.
- The audit finding can be classified into : Major nonconformity, Minor nonconformity, observation, opportunity for improvement ,noteworthy effort
- Records of audits and relevant corrective actions are maintained according (GASCO-HSE-P-011).
- HSE management system audit results are reported to Management Representative for the purpose of management review.

6 - Management Review (ISO 14001/4.6 & OHSAS 18001/4.6)

- GASCO Management periodically reviews all working activities on regular bases, at appropriate intervals; the management reviews the HSE Management System to ensure its suitability, adequacy, and effectiveness.
- These management reviews will establish the need to change HSE policy, HSE management system procedures, or objectives as regarding the HSE management system audit results, changing conditions, and intended improvements.
- Management reviews execution is the responsibility of the Management Representative and

- هذه المراجعات تكون طبقاً وبرنامج محدد المواعيد طبقاً وأهمية وحالة عن النشاطات المراجع عليها.
 - تتم المراجعات الداخلية عن طريق مجموعة من الأشخاص المدربين، وخارجياً بواسطة الجهات الخارجية للمراجعات الفنية (العملية). هؤلاء المراجعين يجب أن يكونوا بعيداً عن مجال نشاط المراجع عليه ويجب أن يكونوا محايدين ومحددتين.
 - الإدارة العامة للسلامة والصحة المهنية وحماية البيئة هي المسؤولة عن وضع خطة وتفعيل المراجعة الداخلية الدورية على نظام إدارة السلامة والصحة المهنية والبيئة طبقاً والإجراء (GASCO-HSE-P-013).
 - نتائج المراجعات التي تتم على نظام إدارة السلامة والصحة المهنية والبيئة تمت تدوينها وتبليغها إلى الجهة التي تتم عليها المراجعة، والأفعال التصحيحية المتعلقة بها يتم تعريفها، مراقبتها، واستكمالها.
 - تنقسم نتائج المراجعات الداخلية على نظام إدارة السلامة والبيئة إلى : مخالفة رئيسية ، مخالفة ثانوية ، ملاحظات، مقترحات للتحسين ، ملاحظات إيجابية
 - السجلات الخاصة بالمراجعات والأفعال التصحيحية المتعلقة بها يتم حفظها طبقاً (GASCO-HSE-P-011).
 - نتائج مراجعة نظام إدارة السلامة والصحة المهنية والبيئة يجب تبليغها إلى ممثل الإدارة العليا حتى يتم إدراجها في مراجعة الإدارة العليا
- 6- مراجعة الإدارة العليا**
(ISO 14001/4.6 & OHSAS 18001/4.6)
- إن الإدارة العليا في شركة جاسكو تقوم دورياً بمراجعة الأنشطة خلال فترات مناسبة. وتقوم بمراجعة نظام ادارة السلامة والصحة المهنية والبيئة للتأكد من أنه وكافي ومناسب وفعال.
 - مراجعات الإدارة العليا تناقش وتفعل مدى الاحتياج لتغيير سياسة السلامة والصحة المهنية والبيئة، الإجراءات والأهداف أخذاً في الاعتبار نتائج المراجعات السابقة، أي تغيير في الظروف أو إذا كان هناك احتياج للتحسين.
 - ممثل الإدارة العليا مسؤول عن تنفيذ مراجعات الإدارة العليا، على أن تشمل تلك المراجعات العناصر الرئيسية للنظام على أن يتم رفع تلك النتائج إلى الاجتماع النهائي والذي يتم بحضور رئيس مجلس الإدارة والعضو

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	60	92

should make a pre-management review to the system elements then lift the outcomes of this meeting to the Chairman, this meeting should be applied 4 times a year as minimum according to (GASCO-HSE-P-013).

- GASCO Chairman (or designee) makes a management review once in the year at least to discuss hot issues of the pre-management review reports as mentioned in the above item

- Document Controller maintains records about management reviews according to (GASCO-HSE-P-011).

- HSE management system audit resets, HSE performance, and external communication include customer complains are discussed in management review meetings.

- Recommendations resulting from management reviews are handled as preventive actions.

7- Waste Management System

- The procedure GASCO-HSE-P-014 providing the mechanism of collecting, transporting, and final disposal of wastes generated during GASCO different activities, which routinely disposed on or off site, by waste treatment and disposal process.

- The responsibilities of this practice divided on waste producers.

- The objective of the procedure is to ensure consistently high standards of waste management to minimize environmental damage, effective use of limited resources, assure legislative compliance, prevent liability, minimize costs, and prevent OH&S risks and profitability.

- This practice intended to comply with the regulations governs solid /liquid waste management process. These regulations are law 4/94 and its executive regulation, EGAS and shareholders regulations and others.

- The used Lube oil is collected from all Depts. in specific drums and transferred to Miser Petroleum Company, Under the supervision of HSE and the

المنتدب وهذه الاجتماعات يتم عقدها 4 مرات سنوياً طبقاً للإجراء (GASCO-HSE-P-013)

يقوم رئيس مجلس الإدارة والعضو المنتدب أو من ينوبه بعقد إجتماع واحد على الأقل لمناقشة الموضوعات الهامة والتي تناقش في إجتماعات مراجعة الإدارة الخاصة بالمناطق كما هو مذكور به.

- يقوم مراقب الوثائق بحفظ النتائج الخاصة بمراجعات الإدارة العليا طبقاً والإجراء (GASCO-HSE-P-013).

- يجب مناقشة في مراجعة الإدارة العليا المراجعات الداخلية والخارجية التي تتم على نظام إدارة السلامة والصحة المهنية والبيئة, مستوى أداء نظام السلامة والصحة المهنية والبيئة, الاتصالات الخارجية متضمنة شكاوي العملاء.

- يتم تنفيذ توصيات مراجعة الإدارة العليا على أنها أفعال وقائية.

7- نظام إدارة المخلفات

- إن إجراء GASCO-HSE-P-014 يعطي طرق تجميع, نقل, وفي الأخر التخلص من المخلفات المتولدة من النشاطات المختلفة لشركة جاسكو, والتي يتم التخلص منها بطريقة روتينية في الموقع أو خارجه, عن طريق معالجة المخلفات وعملية التخلص.

- إن المسؤولية في هذه العملية تقع على الإدارات المنتجة للمخلفات.

- إن الهدف من هذا الإجراء هو التأكد من مدى تطابق نظام إدارة المخلفات مع القوانين والتشريعات الخاصة بإدارة المخلفات وذلك للإقلال من إفساد البيئة, الاستخدام الأمثل للموارد, تجنب المسائلة القانونية, الإقلال من التكلفة وتجنب مخاطر السلامة والصحة المهنية.

- هذه العملية يجب أن تكون مطابقة مع التشريعات الحكومية لعملية إدارة المخلفات الصلبة / السائلة. هذه التشريعات هي قانون 94/4 واللائحة التنفيذية الخاصة به والمنشور الخاص بالشركة القابضة المصرية للغازات الطبيعية EGAS, وتشريعات وآخرين.

- يتم تجميع زيوت التزييت من كل الإدارات في أوعية خاصة ويتم نقلها إلى شركة مصر للبترول تحت إشراف إدارة السلامة والصحة المهنية وحماية البيئة والإدارة المصدرة للزيوت لتتم لها عملية التدوير.

- يتم تجميع المخلفات السائلة والمخلفات الكيميائية

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	61	92

department produced oils to be recycled.

- The liquid wastes & chemical wastes in gas plants are collected from all concerned Depts., under the supervision of HSE and the department who produced the wastes to be treated and disposed.
- Condensate is collected from all condensate tanks in specific drums and returned to production fields.
- The Solid Wastes (tires, wood, pipes, glasses, scrap metal, plastics, spare parts...etc) are collected from all Depts., and transferred to segregation area under Materials Dept. supervision in areas/ plants or the Material General department in headquarters until execute a tender to buy the scrapes.
- The Solid Waste (Used Batteries) is collected from all concerned Depts. Areas and plants under the supervision of HSE to be stored in the segregation area in an environmentally proper manner until sending it to El Naseria landfill. In Headquarters, the used batteries are stored in the Al-Tebbin segregation area until its disposal.
- The Medical Solid Wastes are disposed in an environmentally proper manner i.e., In WDGC, LPG, and East/West Alexandria Area the medical solid wastes are collected sending to the International Alex. Hospital, who send them to El -Homiat Hospital Disposed. And for the Headquarters and the rest of GASCO's areas, the medical solid wastes are collected in the Headquarters in an environmentally proper manner the sending it to the contractor under the supervision of the Medical General Department.
- The Solid Wastes (Molecular Sieve & Silica gel & Insulator materials) are collected and transferred to S.S Dept. to be Disposed by land filling, as paving material, in the segregated area, Under the supervision of Support service and HSE Depts.
- The Solid Wastes (computer stationary-cartridge). are collected by instrumentation Dept. and transferred to IT Dept. in head office to be retained to the Agent.
- The Rest of Solid Hazardous Wastes is collected and storage in segregated area under safe conditions as per recommendation of EEAA.

بالمصانع من كل الإدارات لنقلها إلى شركة سيدبك تحت إشراف إدارة السلامة والصحة المهنية وحماية البيئة والإدارة المصدرة للمخلفات لمعالجتها والتخلص منها.

- يتم جمع المتكثفات من كل تنكات المتكثفات في أوعية خاصة ويتم إرجاعها إلى حقول الإنتاج.
- يتم تجميع المخلفات الصلبة الغير خطرة مثل الإطارات، الخشب، العلب الفارغة، الأوعية، قطع الغيار التالفة..... الخ من كل الإدارات وتنقل إلى منطقة فصل المخلفات تحت إشراف إدارات المهمات بالمناطق/ المصانع/ أو الإدارة العامة للمهمات بالمركز الرئيسي لبيعها في المزاد العلني على هيئة خرده.
- يتم تجميع المخلفات الصلبة (البطاريات المستخدمة) من كل الإدارات المعنية بكل منطقة/ مصنع تحت إشراف إدارة الخدمات المساعدة وإدارة السلامة والصحة المهنية وحماية البيئة ويتم تخزينها بطريقة بيئية في منطقة فصل المخلفات لحين إرسالها إلى مدفن الناصرية أما المركز الرئيسي فيتم تخزينها بالبطاريات المستخدمة في منطقة فصل المخلفات بالتبين لحين التخلص منها بطريقة بيئية آمنة.
- يتم التخلص من المخلفات الطبية بطريقة بيئية آمنة حيث أنه يتم تجميعها في الإسكندرية من مناطق شرق وغرب ومصنعي استخلاص بوتاجاز العامرية ومجمع الغازات بالصحراء الغربية ويتم تسليمها إلى مستشفى الإسكندرية الدولي الذي يتولى تسليمها إلى مستشفى الحميات. أما باقي المناطق والمركز الرئيسي فيتم تجميع المخلفات الطبية في المركز الرئيسي بطريقة بيئية آمنة ثم يتم تسليمها للجهة المتعاقد معها تحت إشراف الإدارة العامة للشئون الطبية.
- يتم تجميع المخلفات الصلبة (المناخل الجزيئية وسيليكيا جيل والمواد العازلة) وتنقل إلى قطاع الخدمات المساعدة للتخلص منها عن طريق الدفن الآمن مثل مواد الرصف في منطقة فصل المخلفات، تحت إشراف كلاً من إدارتي الخدمات المساعدة والسلامة والصحة المهنية وحماية البيئة.
- يتم تجميع المخلفات الصلبة (خرطوشة الأحبار، ماكينة الحبر) عن طريق إدارة الأجهزة وتنقل إلى إدارة تكنولوجيا المعلومات بالمركز الرئيسي لإعادة ملئها أو إرجاعها إلى الجهة الخاصة بها.
- باقي المخلفات الصلبة الخطرة يتم تجميعها وتخزين في منطقة فصل المخلفات تحت ظروف آمنة طبقاً ومتطلبات جهاز شئون البيئة.
- يتم تجميع المخلفات الصلبة وتنقل عن طريق مقاول

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	62	92

• Solid wastes being collected and transported by service contractor to the nearest approved disposal sites by garbage truck under the supervision of support service department in areas and plants or the Support Service department in Headquarters.

• Each HSE Dept. in site/ plant choose the segregation area of solid and liquid wastes.

8-Hazard Identification and Risk

Assessment

• GASCO will identify hazards relevant to all activities (inside and outside the workplace) which conducted and / or may implemented in the Plants/Areas, through team that may include process, instruments, mechanical maintenance and safety to apply both Hazard Identification and Risk Assessment techniques on all activities based on the experience of team members, accident history and results of the related studies and determining the necessary control.

• An external consultants and expertise may award if needed.

• Risk assessments for all activities, facilities, and equipment will be reviewed for consistency on annual base

• GASCO-HSE-P-015 is providing the framework for the management of business and operational risk in the performance of GASCO activities to meet the requirements of Health, Safety, and Environmental policy of GASCO and protect the interests of GASCO shareholders.

• It also establishes the minimum requirements for performing the Hazard Identification (HI) and Risk Assessment (RA) processes, to identify the potential hazards and assess risks relevant to GASCO activities, services and products

This procedure applicable to All GASCO and their Contractors/Subcontractors routine and non-routine activities inside and/or outside GASCO premises.

The procedure not covering actions and activities that may require mitigating emergency cases.

خدمات إلى أقرب منطقة للتخلص المعتمدة بواسطة سيارات القمامة تحت إشراف إدارة الخدمات المساعدة بالمناطق/ المصانع أو الإدارات العامة للخدمات المساعدة بالمركز الرئيسي

• تقوم إدارة السلامة والصحة المهنية وحماية البيئة بكل منطقة/ مصنع اختيار منطقة تجميع وفصل المخلفات الصلبة والسائلة

8-تحديد وتقييم المخاطر

• تقوم جاسكو بتحديد جميع الأخطار المرتبطة بجميع أنشطتها (داخل أو خارج مكان العمل) والتي يتم تنفيذها في حدود المصنع/ المنطقة وذلك من خلال فريق عمل والذي يشتمل على ممثلين عن إدارات التشغيل، الأجهزة، الصيانة الميكانيكية والسلامة للقيام بعملية تحديد المخاطر وتقييمها لجميع الأنشطة اعتماداً على خبرة أعضاء الفريق، تاريخ الحوادث ونتائج أية دراسات متعلقة والتي يتحدد على أثرها إجراءات التحكم والسيطرة المطلوبة.

• قد يتم الاستعانة بأى خبرات أو إستشارات خارجية وذلك عند الحاجة.

• سيتم مراجعة تقييم المخاطر لكافة الأنشطة والتسهيلات والمعدات سنوياً للتأكد من كفايته وكفاءته

• إن الإجراء (GASCO-HSE-P-015) يهدف هذا الإجراء إلى وضع هيكل أساسي لإدارة مخاطر الأعمال الناتجة عن نشاطات شركة جاسكو وذلك للتوافق مع متطلبات السياسة العامة للسلامة والصحة المهنية بالشركة ولحماية إستثمارات المساهمين بالشركة.

• كما يوضح هذا الإجراء الحدود الدنيا المطلوبة لعملية التعرف على المخاطر وتقييمها وذلك لتحديد الأخطار الكامنة وتقييم المخاطر المترتبة عليها والناتجة من أنشطة وخدمات ومنتجات شركة جاسكو

• يطبق هذا الإجراء على كل من يقومون بأعمال لشركة جاسكو سواء العاملين بالشركة أو المقاولين أو مقاولي الباطن وذلك لكافة الأعمال الروتينية والغير روتينية داخل أو خارج حدود الشركة

يستثنى من هذا الإجراء كافة الاعمال التي من شأنها معالجة حالات الطوارئ

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	63	92

- Employees should be consulted in all phases of the analysis, from reviewing the key steps of the job to discussing potential hazards, assessing the risk and recommended control measures - this consultation may be carried out during carrying out the task
- The break down of the job into individual key steps should be submitted by the job requesting/job performing department/contractor the task.
- To perform Hazard identification it should Includes a list of existing or potential hazards within each key step of the job including materials, equipment, environment and people involved in the work process.
- To ensure that no hazards are omitted at this stage, it is proposed that personnel engaged in RA use any methods that can aid hazard identification include the use of:
 - Task observation
 - Accidents, Ill-health and near miss history.
 - Checklists.
 - Workplace inspection.
 - Applicable standards. (OSHA, BS, NFPA,....)
 - Manufacturer's instructions, recommendations, and catalogues.
 - Employee's consultation
- To define effects associated with each hazard, It's important to identify who might be at risk and also how this might occur, including:
 - Employees, including staff other than persons conducting tasks, such as people working in close proximity or passing through the work area.
 - No employees, such as contractors, visitors, and members of the public.
 - Company assets, such as materials, tools and equipment
- To Estimate Severity Rating, The judgment about the consequence (severity) rating of the hazard, with or without any control measures in place.
 - The consequence ratings are applied for People, Asset (Cost), Public Image (Reputation) and Environment,

- يجب إستشارة العاملين في جميع مراحل التحليل ، من مراجعة الخطوات الرئيسية في العمل لمناقشة الأخطار المتوقعة وتقييمها وإصدار التوصيات بخصوص إجراءات التحكم والسيطرة المقترحة - تلك الإستشارات من الممكن أن تتم خلال أداء العمل
- يتم تقسيم العمل إلى مجموعة من الخطوات الرئيسية على أن يتم تقديم تلك الخطوات من خلال الإدارة الطالبة/المنفذة للعمل أو المقاول المنفذ للعمل
- للقيام بأعمال التعريف بالمخاطر فإنه يجب أن تشمل قائمة التعريف كل الأخطار الموجودة أو المتوقعة لكل خطوة رئيسية من خطوات العمل على أن تراعي المواد ، الأجهزة ، البيئة المحيطة والعاملين المشاركين في العمل
- حتى يتم التأكد من عدم إهمال أى أخطار قد تكون موجودة في هذه المرحلة ، فإنه على الأشخاص القائمين بعملية تقييم المخاطر إستخدام أى من الأساليب الآتية للمساعدة في التعرف على الاخطار الموجودة:

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ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	64	92

b) **Substitution (reduce)** involves replacing the hazard or environmental aspect by one that presents a lower risk.

c) **Engineering controls (Isolation)** involve some structural change to the work environment or work process to place a barrier, or prevent contact between the worker and the hazard or environmental aspect. This may include isolation or enclosure of hazards or environmental aspects, for example machine guards and mechanical handling devices.

d) **Administrative controls** including warning signs, written instructions, work permits,....

Reduce or eliminate exposure, of individuals to a hazard or the environment from an environmental aspect, by adherence to procedures or instructions.

e) **Personal Protective Equipment** relates only to hazards and their impact on personal safety risks. People wear it as a barrier between themselves and the hazard. The success of this control is dependent on the protective equipment being chosen correctly, as well as fitted correctly and worn at all times when required

- To assess the Residual Risk that remains with the control measures in place, the consequence and probabilities ratings are again selected from the scales, respectively. The result of these two ratings provides a measure of the Residual Risk
- The information provided in the Residual Risk box is used in the next stage of the Risk Management to evaluate whether the risk is adequately controlled or not

To decide if the hazards identified have been controlled to an acceptable level, the risk analysis stage took into account the control measures

الإحلال (التقليل) : ويشمل هذا الإجراء على إحلال الخطر أو المؤثر البيئي بأخر يكون أقل منه من حيث مستوى المخاطرة .

ج- التحكم الهندسي (العزل) : ويشمل تلك التغييرات التركيبية والتي يتم إدخالها على بيئة العمل أو طريقته ومنها وضع عازل أو منع الإتصال المباشر بين العامل والخطر أو المؤثر البيئي. ويشكل ذلك عزل أو إحتواء الخطر أو المؤثر البيئي ، مثال على ذلك أجهزة الوقاية للأجزاء الدوارة بالماكينات وأجهزة تداول المواد .

د- التحكم الإداري : ويشتمل على الإشارات التحذيرية والتعليمات المكتوبة ، تصاريح العمل ، إلخ .
يتم تقليل أو إزالة تعرض الأشخاص للخطر أو المؤثر البيئي بإتباع بعض الإجراءات أو التعليمات المكتوبة

هـ- مهمات الوقاية الشخصية: وهي ذات علاقة بالأخطار المتصلة بالعنصر البشري حيث يرتديها الأشخاص كحاجز وقاية بينهم وبين الخطر المحيط. ونجاح هذه الوسيلة يعتمد على الاختيار الصحيح لنوعية مهمات الوقاية ومدى ملائمتها واستخدامها وإرتدائها بصورة صحيحة ومستمرة عند الحاجة إليه.

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	66	92

currently applied to the hazard and, therefore, the result of the analysis indicates the amount of risk that remains (i.e. the residual risk) of each hazard is:-

- trivial;
- tolerable risk
- intolerable and /or Zero tolerance)

- In general, high risks may require the provision of considerable additional resources involving special equipment, training, high levels of supervision, and consideration of the most effective methods of eliminating or controlling hazards.

- Lower level risks may be considered as acceptable but still further actions should be taken to try to reduce these risks if possible within reasonable limits

- The supervisor communicate the contents of the Risk assessment to the employees in site to ensure that they know the risks resulted from the job and the control measures must be followed, It's not allowed to start any task/job before ensuring that all participants are fully aware with the hazards and the control measures needed to do job safely, and this should be registered using the toolbox talk form (GASCO-F-40)

Incident Investigation

- As a part of its consistent HSE management system, GASCO investigate all incidents to reduce the frequency and severity of accidents and thereby reduces the personal suffering, environmental pollution, & material loss sustained.
- (GASCO-HSE-P-016) describes GASCO incident investigation and Reporting Procedure; The purpose of this procedure is to ensure that all staff in GASCO ,at differ levels, are aware of their responsibilities with respect to the immediate reporting of all incidents and sharing, as they call for, in investigations
- This procedure applies to all GASCO employees and its contractors in case of there is no acceptance from GASCO to the contractor

:

- يمكن إهماله
- مقبول
- غير مقبول

.(GASCO-F-40)

أستقصاء الحوادث

- كجزء أصيل من نظام إدارة السلامة والصحة المهنية الخاص بجاسكو ، تقوم الشركة بالتحقيق في جميع الحوادث والأفعال والظروف الغير الأمانة بهدف تقليل معدلات تكرار وشدة الحوادث، بما يؤدي إلى تخفيض معاناة العاملين من جرائها، وتلوث البيئة وتقليل الخسائر المادية.
- الإجراء (GASCO-HSE-P-016) يصف الخطوات المتبعة لشركة جاسكو في استقصاء الحوادث /الحوادث وشيكة الوقوع ، ويهدف إلى التأكد من أن كل العاملين بشركة جاسكو ، على اختلاف مستوياتهم ، على دراية بمسئولياتهم تجاه الإبلاغ الفوري عن الحوادث/الحوادث وشيكة الوقوع والمشاركة ، عند استدعائهم، في التحقيقات
- يتم تطبيق هذا الإجراء على جميع العاملين بشركة جاسكو وعمالة المقاول مالم يكن لشركة المقاول نظام لإستقصاء الحوادث تم قبوله من

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	67	92

incident procedure, all incidents shall be reported, classified, and recorded in the corporate GASCO HSE formats, using this procedure.

- In addition to above , The procedure covers; incident categories, initial incident reporting, incidents evaluation, injury classification and Incidents investigation, with special note is this procedure is limited to incident term including accident & near miss and not applied for emergency case, which is consider as incident also, but covered in GASCO-HSE-P-08 procedure.
- After an incident, the supervisor of the injured person or the unit manager where the incident occurred should complete an Incident/Incident Report Form and send it to the Area/Plant HSE MGR. As well as the supervisor of the injured person or the unit manager is responsible for reporting and recording the incident details (date, time and scenario) in a nearest police station Once endorsed by the Area/Plant HSE MGR., the report should be sent to GASCO HSE General Manager for appropriate follow-up actions.
- The Administration MGR. shall be informed for insurance and compensation matters.
- the HSE general manager have to be informed EGAS with all incidents on monthly bases
- Both HSE manager and administration MGR are responsible for execution of all work injury process that mentioned in GASCO manual
- Incidents which result in, or which have the potential to inflict serious injuries may require a formal investigation. In such cases, the HSE General Manager and Site Manager shall appoint an Investigation team.
- The investigation should be carried out as soon as possible after an incident. The quality of evidence

شركة جاسكو، كل الحوادث /الحوادث وشيكة الوقوع يجب الإبلاغ عنها وتصنيفها ثم حفظها في النماذج المعتمدة بنظام إدارة السلامة والصحة المهنية وحماية البيئة بجاسكو والواردة بهذا الإجراء.

بالإضافة إلى ما ذكر بعاليه ، فإن هذا الإجراء يغطي تصنيف الحوادث، الإبلاغ المبدئي عن الحوادث /الحوادث وشيكة الوقوع، تقييم الحوادث، تصنيف الإصابات واستقصاء الحادث مع ملاحظة أن هذا الإجراء يغطي فقط الحوادث والحوادث وشيكة الوقوع ولا يطبق على حالات الطوارئ (التي تعتبر حادث) والتي يتم تغطيتها بالإجراء رقم GASCO-HSE-P-08

بعد وقوع الحادث يقوم المشرف على الشخص المصاب أو المدير المسئول بمكان وقوع الحادث باستكمال تقرير الإبلاغ عن الحادث وإرساله إلى مدير السلامة بالمصنع بالمنطقة. كما أن المشرف على الشخص المصاب أو المدير المسئول مسئول عن الإبلاغ عن تفاصيل الحادث (الوقت، اليوم، سيناريو الحادث) وذلك في أقرب نقطة أو قسم شرطة. وبمجرد وصول التقرير إلى مدير السلامة بالمنطقة /بالمصنع ترسل نسخة من التقرير إلى مدير عام السلامة والصحة المهنية وحماية البيئة وذلك لاتخاذ الإجراءات المناسبة.

يتم إبلاغ مدير الشؤون الإدارية وذلك لأغراض التأمين والتعويضات.

يقوم مدير عام السلامة والصحة المهنية وحماية البيئة شهرياً بإبلاغ الشركة المصرية القابضة للغازات الطبيعية بكل الحوادث التي قد تحدث.

مدير عام الشؤون الإدارية و مدير عام السلامة والصحة المهنية وحماية البيئة مسئولين عن تنفيذ كل إجراءات إصابات العمل والموضحة بدليل جاسكو.

جميع الحوادث والتي ينتج عنها أو لها القدرة على إحداث عواقب خطيرة قد تحتاج إلى استقصاء رسمي بحيث يقوم كلاً من مدير عام السلامة ومدير المنطقة /المصنع بتعيين فريق للإستقصاء في مثل هذا الحادث

يجب أن يتم الإستقصاء في الحوادث

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	68	92

will deteriorate rapidly with time, therefore delayed investigations are usually not as conclusive as those performed promptly

Management Of Change

- The purpose of this approach is to define GASCO's minimum requirements for managing all permanent or temporary changes to operations, processes, control systems, equipment, machinery, materials, standards or procedures related to GASCO, and its contractors, activities.
- This Procedure shall apply to all activities managed directly by GASCO and all work activities carried out by GASCO employees.
- Management of Change is not intended to address changes during emergencies that require immediate action to control the situation from developing into an unsafe condition.
- Competent personnel must make adjustments during emergencies to maintain safe operations. However, after the emergency has abated, the need for a MOC should be reviewed for possible future incorporation into the written procedures.
- MOC's are used to evaluate the undesired impact of changes to the facility (i.e., technology, equipment, materials, process chemicals, and procedures) except for replacement in kind (RIK), and provide authorization for proceeding with the change.
- When it has been determined that a change is not a "replacement in kind," the MOC form (GASCO-HSE-41) must be completed, reviewed and signed by the appropriate people. Before the change is actually implemented, the appropriate level of management must authorize the change.
- In addition to these specific objectives, this instruction also provides guidelines on the actual process flow through the procedure. The major steps are:
 - *Initiation*
 - *Review*
 - *Approval*
 - *Implementation and Commissioning*
 - *Documentation and Control*

بسرعة عقب وقوع الحادث حيث أن وضوح الأدلة قد يقل أو ينعدم بمرور الوقت مما قد يؤدي لإنخفاض جودة التحقيق.

إدارة التغيير

إن الغرض من هذا النهج هو قيام جاسكو بتحديد الحد الأدنى من المتطلبات اللازمة لإدارة جميع عمليات التغيير الدائمة أو المؤقتة والخاصة بعمليات التشغيل، وأنظمة المراقبة والتحكم، والمعدات، والآلات، والمواد، والأكواد والقواعد المطبقة، والإجراءات المتصلة بأنشطة جاسكو أو المقاولين التابعين لها. ينطبق هذا الإجراء على جميع الأنشطة التي تدار مباشرة من قبل الشركة المصرية للغازات الطبيعية وجميع الأنشطة التي يقوم بها العاملون بها. إن إجراء إدارة التغيير ليس منصب على تلك التغييرات المتعلقة بمعالجة حالات الطوارئ والتي قد تتطلب إجراءات فورية للسيطرة على الوضع حتى لا يتفاقم ويصل لأوضاع غير آمنة يصعب السيطرة عليها. يقوم الأشخاص الأكفاء المنوط بهم إدارة حالات الطوارئ بإجراء تغييرات أثناء حالات الطوارئ للحفاظ على تأمين العمليات التشغيلية. ولكن، بعد إنتهاء حالات الطوارئ، يجب مراجعة تلك التغييرات ووضعها في صورة إجراءات مكتوبة حتى نتمكن من الإستفادة منها في المستقبل من خلال دمجها في إجراء إدارة التغيير. تستخدم إدارة التغيير لتقييم الأثار الغير مرغوب فيها من أي تغييرات على المرفق (مثل التكنولوجيا المستخدمة، أو المعدات، أو المواد، أو الكيماويات المستخدمة في العمليات التشغيلية، أو الإجراءات) - باستثناء حالات التغيير النوعي - وذلك للموافقة على المضي قدماً في هذا التغيير.

عندما نتبين أن التغيير ليس "تغيير نوعي" يتم استخدام نموذج إدارة التغيير رقم 41 والذي يجب أن تستكمل بياناته، ويجب أن يراجع من الإدارة ويعتمد من المستوى المناسب قبل أن يأذن بتنفيذ هذا التغيير فعلياً. وبالإضافة إلى هذه الأهداف المحددة، فإن هذه التعليمات توفر الدليل الإرشادي العملي لمتابعة تنفيذ هذا الإجراء. وقد تم وضع خريطة تدفق توضح سريان هذا الإجراء كما هو مبين في الملحق (أ)، وتفصيله في بند 7، والخطوات الرئيسية لإجراء إدارة التغيير هي:

- *البدء*
- *المراجعة*
- *الموافقة والاعتماد*
- *التنفيذ والبدء في التشغيل*
- *مراقبة الوثائق*

ISSUE NO:	5	PAGE	OF
ISSUE DATE:	01/12/2008	69	92

HSE MANUAL

8- Contractor safety

General HSE Regulations and Requirements

1.1 General Preamble

- The word contractor means contractor and sub-contractor personnel.
- It is the policy of the company to conduct its activities in such a way as to take foremost account of the health and safety of its employees, Its contractors' employees and of other persons, and to give proper regard to the conservation of the environment In implementing this policy the contractor shall comply with all relevant legislation and promote in an appropriate manner measures for the protection of health, safety and the environment for all who may be affected directly or indirectly by its activities.
- departments concerned to deal with the contractors (contracts general department / support services general department / projects general department / networks general department / public management of the facilities / PIMCOE / Materials... etc.) as well as relevant sectors so areas / plants responsible for inform contractors licensed and also responsible for the follow-up activation of this procedure.

1.2 Contractor HSE policies

- Contractor acknowledges company strong commitment to HSE and affirms that it has a written HSE policy which is of a standard comparable to company's HSE policy and which has been signed & is actively supported and endorsed by contractor's management
- Prior to mobilization and within two weeks of the effective date contractor shall submit and obtain company s approval for its HSE Plans and Procedures for the work together with a definitive explanation of how it intends to manage the implementation of the plans and procedures.

1.3 Contractor HSE Management System

- The contractor shall have a developed

8- السلامة للشركات المقاوله:

اشتراطات عامة للسلامة والصحة المهني
1-1 مقدمة:

• كلمة "مقاول" هنا تعني العمالة التابعة لأي مقاول أو مقاولي الباطن.
• طبقاً لسياسة الشركة فإن جميع الأنشطة التي تقوم بها الشركة تولي الاهتمام في المقام الأول لسلامة وصحة العاملين بها ، وعمالة المقاول والأشخاص الآخرين ، كما أنها تولي اهتماماً شديداً بحماية البيئة. وللتوافق مع هذه السياسة فإن المقاول مطالب بالتوافق مع كافة التشريعات والقوانين التي يخضع لها النشاط وتعزيز الإجراءات التي تكفل حماية الصحة والسلامة والبيئة لكافة الأطراف التي تتأثر بصفة مباشرة أو غير مباشرة بنشاط المقاول .

• الإدارات المعنية بالتعامل مع المقاولين (الإدارة العامة للعقود / الإدارة العامة للخدمات المساعدة / الإدارة العامة للمشروعات / الإدارة العامة للشبكات / الإدارة العامة للتسهيلات / المركز المتميز لفحص الخطوط /المهام ... إلخ) وكذلك القطاعات المعنية بذلك بالمناطق / المصانع مسؤولة إبلاغ المقاولين المتعاقد معها وكذلك مسؤولة عن متابعة تفعيل هذا الأجراء .

2-1 سياسة السلامة والصحة المهنية وحماية البيئة للمقاول:

• يجب أن يضع المقاول في اعتباره أن الشركة تولي دعماً قوياً للسلامة والصحة المهنية ولإظهار ذلك فإن المقاول يجب أن يكون لديه سياسة تجاه السلامة والصحة المهنية وحماية البيئة تناظر مثيلاتها في الشركة ويجب أن تكون هذه السياسة موقعة ومدعومة من الإدارة العليا للمقاول.
• قبل الانتقال للموقع وفي خلال أسبوعين من توقيع العقد يجب أن يحصل المقاول على موافقة الشركة على خطة العمل الخاصة بالسلامة والصحة المهنية وحماية البيئة ، وكذلك الإجراءات الخاصة بالعمل مع بيان كيفية تطبيق وتفعيل هذه الخطط والإجراءات.

3-1 نظام إدارة السلامة والصحة المهنية وحماية البيئة للمقاول

• يجب أن يكون للمقاول نظام إدارة للسلامة والصحة

70ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	70	92

HSE MANUAL

HSE Management System that is compatible with the company's HSE management system. Company has the right to audit contractor's HSE management system and the Contract HSE Management Plan to ensure compliance. CONTRACTOR will take remedial actions to address any non-compliance and provide feedback to COMPANY on actions taken.

1.4 HSE Regulations and Standards

- The contractor shall conduct its operations in accordance with the HSE regulations and standards as set out in Gasco HSE regulations.
- All HSE regulations and/or instructions may be amended by company at any time, and will be communicated to contractor to comply with all such amendments and/or additions.

1.5 Contractor Responsibilities

- Contractor is fully responsible to ensure that its personnel strictly adhere to all applicable HSE rules and regulations.
- It is contractor's obligation to instruct its personnel on all applicable HSE rules to control the adherence to these rules by its personnel.
- Any person failing to observe & comply with HSE rules is subject to removal from the site & subsequent replacement.
- Contractor will be entirely responsible for accidents, resulting from neglecting or not following the specified or necessary HSE rules and precautions.
- Contractor and its personnel shall perform their work according to the rules of good housekeeping and avoid any unnecessary risk.
- Contractor and its nominated HSE Officers) shall work closely with the company HSE officer throughout the period of the contract. Contractor shall advise company of the qualifications, experience and competency of its

المهنية وحماية البيئة متوافق مع نظام الشركة وللشركة الحق في إجراء مراجعات على هذا النظام للتأكد من مدى مطابقة هذا النظام لنظام الشركة. على المقاول اتخاذ كافة الإجراءات التصحيحية بصفة فورية لإصلاح أية عدم تطابق ينتج عن هذه المراجعات وموافاة الشركة بالخطة الموضوعة لتنفيذ هذه الإجراءات التصحيحية.

4- تشريعات ومواصفات السلامة والبيئة

- يجب أن يؤدي المقاول ما يطلب منه وفقاً لتعليمات السلامة والصحة المهنية والمواصفات القياسية العالمية وكما هو منصوص عليه في تعليمات جاسكو.
- أي تعليمات أو مواصفات خاصة بالشركة يمكن تعديلها أو تغييرها ويتم إبلاغ المقاول حتى يتم الالتزام بالتعديلات أو الإضافات الجديدة.

5-1 مسؤوليات المقاول

- يلتزم المقاول بالتأكد من التزام كافة عامله بتعليمات السلامة والصحة المهنية وحماية البيئة.
- تعتبر مسؤولية المقاول إبلاغ كافة عامله بالقواعد والتعليمات الخاصة بالسلامة والصحة وحماية البيئة
- أي شخص لا يلتزم بتعليمات السلامة والصحة المهنية وحماية البيئة الخاصة بالشركة فإنه يعرض نفسه للاستبعاد أو الاستبدال الفوري من الموقع. يعتبر المقاول مسئول عن أي حادثة أو إصابة تنتج عن عدم اتباع أي من تعليمات السلامة والصحة المهنية الخاصة بالشركة
- المقاول مسئول كاملاً عن الحوادث نتيجة مخالفة أو اهمال المواصفات القواعد الاحتياطات السلامة والصحة المهنية وحماية البيئة
- يجب أن يلزم المقاول العمالة التابعة له بالتعليمات الخاصة بالترتيب والنظام لتجنب الأخطار الغير ضرورية.
- يجب أن يتعاون المقاول والمسئول لديه عن السلامة والصحة المهنية مع مسئول السلامة التابع للشركة طوال فترة العقد، كما يجب أن يقدم المقاول للشركة ببيان بكافة الخبرات والمؤهلات الخاصة بمسؤولي السلامة والصحة المهنية وحماية البيئة التابعين له للموافقة عليها قبل البدء في العمل.

71ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	71	92

HSE MANUAL

nominated HSE Officers) for company approval prior to commencement of work.

- Contractor will arrange to hold monthly HSE meetings with its personnel and will advise company HSE Officer of time and place of such meetings.
- Contractor shall send a representative to HSE Meetings as requested by company.
- Contractor shall produce incident and near-miss reports and HSE reports in accordance with company's procedures & reporting systems
- Contractor shall conduct all its activities in such a way as to avoid harm to the health of, or injury to, employees and others and damage to property or the environment
- Contractor shall work on the principle that all injuries shall be prevented and promote actively amongst all those associated with their activities the high standards of HSE awareness and discipline that this principle demands
- Contractor is accountable under the contract for the HSE performance of his
- Subcontractors and shall ensure that subcontractors working on its behalf apply health, safety and environmental standards fully compatible with its own.
- Contractor shall keep its employees, subcontractors, and the relevant authorities appropriately informed of known potential hazards that might affect diem; and make them aware of what is being done to minimize die risks and to improve safety of the working environment.
- Contractor shall establish and maintain contingency procedures to minimize harm from accidents that may nevertheless occur, and work with the relevant authorities and emergency services in an appropriate manner in the development and application of these contingency procedures.
- The contractor shall provide to each of

• يلتزم المقاول بعقد اجتماع شهري للسلامة والصحة المهنية وحماية البيئة مع الأفراد التابعين له مع إخطار مسئول السلامة وحماية البيئة بالشركة بموعد ومكان انعقاد الاجتماع

• يلتزم المقاول بإرسال ممثلين له للاجتماعات الخاصة بالسلامة وحماية البيئة طبقاً وما تطلبه الشركة.

• يلتزم المقاول بتحديد والتعرف على الأخطار الكامنة في موقع العمل وإبلاغها للشركة طبقاً والتعليمات المتبعة بالشركة

• المقاول بتنفيذ كافة الأعمال مراعيًا عدم تأثر صحة العاملين أو أي أشخاص آخرين وكذلك عدم حدوث أضرار لأيًا من ممتلكات الشركة أو الغير.

• يجب أن يلتزم المقاول بمبدأ منع الحوادث والعمل على تحفيز مستويات قياسية من التوعية بالسلامة والصحة المهنية.

• طبقاً للعقد فإن المقاول مسئول عن أداء السلامة والصحة المهنية وحماية البيئة لمقاولي الباطن التابعين له

• كما يجب أن يتأكد من أن كل مقاولي الباطن يطبقون مستوى قياسي في السلامة والصحة المهنية وحماية البيئة كما يطبقه هو.

• يجب أن يوضح المقاول لكل التابعين له ولمقاولي الباطن كافة المخاطر التي من الممكن أن تؤثر عليهم في بيئة العمل وتوعيتهم بالإجراءات التي يجب اتخاذها لتقليل الأضرار الناتجة عن هذه المخاطر وتحسين مستوى السلامة في بيئة العمل.

• يلتزم المقاول باتخاذ كافة الإجراءات المطلوبة لمجابهة حالات الطوارئ لتقليل الآثار الناجمة عن أي حادث ، وكذلك عليه التعامل مع الجهات المختصة وخدمات الطوارئ بصورة مناسبة لتطبيق وتحديث إجراءات إدارة الطوارئ.

72ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	72	92

HSE MANUAL

the contractor's personnel on the worksite as a minimum the following safety apparel to a recognized international standard:

- Safety helmet
- Overalls;
- Safety boots
- Gloves
- Any P.P.E according to nature of job
- Contractor shall ensure that his subcontractors also provide the above safety apparel to their personnel.
- Contractor shall ensure that no employee younger than 18 years or exceeding 60 years is working for Gasco

1.6 Incident / accident Notification

• Contractor shall immediately notify company of any work-related incidents / accident involving death or injury to contractor's personnel or others, including oil spills or damage done to property or the environment together with any near misses or dangerous occurrences. In the case of any accident involving death or injury to contractor's personnel or to any other person, contractor shall thereafter, within 12 hours notify the company by fax followed within 7 days by a full report giving the following information where applicable:

- Name of Employer
- Worksite or place where the accident or dangerous occurrence happened.
- Date and time of accident
- Employee's name
- Occupation
- Cause of injury
- date and time admitted to hospital
- Cause or nature of accident or dangerous occurrence.

• Any accident involving a death or serious Injury requires a joint investigation and report by company and contractor.

1.7 Violation Notice

• يلتزم المقاول بتوفير مهمات الوقاية التالية لكافة العاملين بالموقع كحد أدنى مقبول من الشركة: خوذة / أوفرول / حذاء / جوارتي .

• يجب أن يتأكد المقاول من التزام المقاولين التابعين له (مقاولي الباطن) بتوفير مهمات الوقاية المطلوبة بالبند السا

• يجب أن يلتزم المقاول بعدم تشغيل العمالة أقل من 18 سنة أو أكبر من 60 سنة في مواقع الشركة.

6-1 الإبلاغ عن الحوادث :-

• يلتزم المقاول بإبلاغ الشركة بأي حوادث أو إصابات ناتجة عن العمل بما فيها الوفيات أو الإصابات لعمالة المقاول أو أي شخص آخر , بما في ذلك انسكاب الزيوت أو أي أضرار للممتلكات أو البيئة وكذلك الإبلاغ عن أي أخطار كامنة من الممكن أن تحدث . يجب أن يبلغ المقاول الشركة في خلال 12 ساعة في حالة حدوث أي إصابة أو وفاة لأحد العاملين أو أي شخص آخر وذلك بواسطة الفاكس مع إرسال تقرير كامل عن الإصابة مشتملا على كافة البيانات والمعلومات الخاصة بالحالة

- اسم الموظف .
- المكان الـ1 ظهرت به حادثة او خطر تكرر حدوثه
- تاريخ وتوقيت الحادثة
- أسماء الموظفين .
- المهنة
- سبب الإصابة
- تاريخ وتوقيت المذكور بالمستشفى
- سبب وطبيعة الحادثة أو الأخطار المتكررة

• الحوادث التي قد نتج عنها موت أو إصابة واضحة وملحق بها تحقيق وتقرير من الشركة والمقاول

7-1 انذار نتيجة مخالفة :-

• في حالة ما رات الشركة أن المقاول لم يتوافق مع أي

73ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	73	92

HSE MANUAL

- In the event that the COMPANY considers that the CONTRACTOR has failed to comply with the latest approved Contract HSE Management Plan or other HSE requirements, then the COMPANY shall issue the contractor with a HSE violation notice. A HSE violation notice is any written notification issued by company detailing specific aspects of the Works or Services that are in breach of company HSE Regulations. Persistent non-conformance.
- Termination of Contract and suspension of contractor from company list of approved vendors/contractors. Environment Regulations and Requirements

2.1 Chemical Handling

- Chemical data sheets (MSDS) are to be provided and kept on the worksite for all products supplied by the CONTRACTOR. In addition, posters giving a brief description of hazards and first aid actions for each chemical should be located at various key locations on the worksite.

- All chemicals and chemical containers shall be handled and disposed of in accordance with Gasco HSE management system procedures. CONTRACTOR shall inform COMPANY how chemicals and chemical containers will be disposed of and COMPANY will under no circumstances accept responsibility for the removal and disposal of any unused chemicals.

2.2 Waste Management
a) Waste segregation

- The CONTRACTOR should have and apply waste segregation procedure which complies with COMPANY standards.

b) Garbage Disposal.

بند من بنود العقد الخاصة بالسلامة والصحة المهنية وحماية البيئة أو أى اشتراطات خاصة بالسلامة والصحة المهنية وحماية البيئة فإن الشركة ستقوم بإرسال اذار بالمخافة للمقاول , وهذا الانذار عبارة عن تعليمات مكتوبة من الشركة بخصوص أى شئ يؤثر على مجال العمل أو الخدمات ويكون مخالفة لاشتراطات السلامة وحماية البيئة الخاصة بالشركة .

- انتهاء التعاقد يتوقف على مقدرة المقاول على التوافق مع التعليمات الخاصة بالبيئة .

1-2 تداول المواد الكيميائية

- دليل السلامة لتداول المواد الكيميائية (MSDS) يجب أن تتوفر لكل المواد الكيميائية التى تستخدم فى مواقع العمل أو أى مواد كيميائية اخرى يتم توريدها بواسطة المقاول , كما يجب توفير ملصقات بتعليمات السلامة والتصرف على اخطار المواد الكيميائية وكذلك الاسعافات الاولية فى حالة التعرض لهذة المواد , ويلتزم المقاول بلصق هذة الملصقات فى اماكن مختلفة بموقع العمل .

- كل الكيماويات والاوعية الحاوية لها يجب أن تتداول ويتم التخلص منها طبقا وتعليمات السلامة وحماية البيئة الخاصة بجاسكو . كما يجب على المقاول باخطار الشركة عن كيفية التخلص من أى كيماويات أو اوعية حاوية لها علما بأن الشركة لن تكون مسؤولة باى حال من الاحوال عن أى مسؤوليات تترتب على التخلص الغير امن من أى كيماويات غير مستخدمة .

202- التخلص من النفايات :-
أ) نقل المخلفات :-

- يجب أن يتوافر لدى المقاول اجراءات خاصة بفصل المخلفات تتوافق مع الاجراءات الخاصة بجاسكو , كما يلتزم المقاول بتنفيذ هذة الاجراءات .

ب) التخلص من مخلفات الطعام :-

- يجب توفير عدد مناسب من اوعية جمع القمامة من

74ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	74	92

HSE MANUAL

- A sufficient number of fly proof bins or containers shall be supplied to all food establishments and to camp areas and worksite to maintain cleanliness. Bins shall be cleaned immediately after being emptied.
- Arrangements shall be made for a daily collection of food wastes from all food establishments and for not less than twice weekly collections of refuse from living quarters and work sites.
- Garbage disposal shall be in accordance with the Egyptian Environmental Law No 4 dated 1994.

c)Waste Reporting

- Contractor shall submit report to company giving volumes and details of all waste materials for each field location as a result of contractor operations.

3. Safety Regulations and Requirements
3.1 Hazardous Area Classification

- The contractor shall comply with the company regulations with regard to the hazard area classification.
- Equipment located within the hazardous area shall be classified as suitable for use in that area by a recognized authority (UL, silenic, etc.).
- The contractor shall instruct all his personnel in the significance of the Hazardous Area Classification and shall enforce strict compliance with safe operations therein at all times.

3.2 Fire prevention within Gas Facilities

- Any use of open flame including matches and cigarette lighters or electrical apparatus including mobile phones, PC laptops and cameras is strictly forbidden within the limits of oil and gas facilities/installations or elsewhere as designated by company unless covered by a hot work permit

النوع ذات التغطية وذلك لتجميع مخلفات الطعام المخلفات العادية في موقع العمل للمحافظة على نظافة المكان . كما يجب تنظيف الاوعية بعد جمع القمامة منها .

- يجب ترتيب جمع المخلفات من هذه الاوعية بصفة يومية

- التخلص من المخلفات يجب أن يكون متطابقا مع قانون البيئة المصري 4 لسنة 1994.

ث)حصر كميات المخلفات :-

- يجب أن يقوم المقاول بإبلاغ الشركة بكميات ونوعيات اى مخلفات ناتجة عن نشاطه في كل موقع وذلك بصورة دورية للشركة .

3. تعليمات السلامة
1.3 – تصنيف المناطق الخطرة

- يجب أن يلتزم المقاول بتابع اية تعليمات للشركة بخصوص تصنيف المناطق الخطرة .
- اى معدات يتم استخدامها داخل المناطق الخطرة يجب أن تكون مصنفة للعمل في مثل هذه المناطق ومعتمدة من جهة عالمية (UL, silenic, etc.) .

- يلتزم المقاول بتوضيح اهمية تصنيف المناطق الخطرة للعمالة التابعة له , كما يلتزم بفرض قيود حادة على التوافق مع التشغيل الامن في كل الاوقات .

2.3- الوقاية من الحريق في تسهيلات وتركيبات الغاز

:-

- يمنع منعاً باتاً استخدام الهب المكشوف بما في ذلك اعواد الثقاب والةلاعات واجهزة الموبايل / الكمبيوتر المحمول / الكاميرات في مناطق تسهيلات تركيبات الغاز أو اى مناطق اخرى تحددها الشركة مالم يتم استصدار تصريح اعمال ساخنة.

- يمنع منعاً باتاً حمل الولاعات / البكبريت أو التدخين في مناطق تسهيلات /تركيبات الغاز الا بالمناطق

75ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	75	92

HSE MANUAL

- Smoking and carrying of lighters or matches on gas facilities/installations limits are strictly forbidden except at authorized smoking areas. Anybody found smoking outside the authorized smoking areas will be liable to a written violation notice and immediate dismissal and removal from work
- Contractor shall consult company's approved representative before bringing on site any fire or safety equipment.

3.3 COMPANY'S Permits to Work System

- Contractor personnel shall be aware of and follow the latest revision of company's Permit to Work system and shall be responsible for obtaining the necessary permits in a timely manner so that work is not delayed. Contractor must obtain a Permit to Work for any activity which is not part of the normal operation of the facility and any operation inside or outside a facility which involves increased risk, including but not limited to:
 - Hot Work to be done in an operational area,
 - Maintenance work in operational areas.
 - Entry into vessels or confined spaces.
 - Excavation Work.
 - Work on electrical systems.
 - Use of ionizing radiation.
- A Clearance Certificate has to be issued by company before any work can start on existing pipelines or plant including the operation of motor vehicles in the plant area.
- Hot Work Permit has to be issued by COMPANY or it's designate for all hot work (including use of spark producing tools and other construction equipment).

المصرح فيها بالتدخين . في حالة مخالفي اى شخص بمخالفة تعليمات التدخين فانه سيعرض نفسه للاستبعاد الفوري من موقع العمل مع اذار بالمخالفة للمقاول .

- يلتزم المقاول باخطار المسئول المختص من قبل الشركة قبل احضار اى ادوات خاصة بالسلامة وحماية البيئة أو الإطفاء بموقع العمل .

3- نظام تصاريح العمل :-

• يجب أن يستوعب عمالة المقاول بنظام تصاريح العمل كما يجب أن يلتزموا بتطبيق نظام التصاريح وفقا لاحدث اصدارات الشركة . كما يجب أن يلتزم المقاول بطلب التصاريح فى الاوقات المحددة بحيث لا تؤثر على سير العمل . يجب أن يستصدر المقاول تصريح عمل لاي عملية غير نمطية بالنسبة لطبيعة عمل المكان وكذلك لاي اعمال تتم داخل أو خارج الموقع ولكن تشمل على مخاطر عالية مثل

- الاعمال الساخنة فى مواقع التشغيل .
- اعمال الصيانة فى مواقع التشغيل
- دخول فى الاوعية أو الاماكن المغلقة
- اعمال الحفر
- العمل فى النظام الكهربى
- استخدام الاشعاع الايونى

• يجب أن يحصل المقاول على شهادة خلو من الغازات قبل بداية اى عمل فى مناطق التشغيل او اى خط غاز فى الخدمة وينطبق ذلك على ادخال اى مركبات داخل مناطق التشغيل .

• تصاريح الاعمال الساخنة (تتضمن الشرر الذى ينتج من الادوات أو اى من ماكينات الانشاء) يصدر من الشركة .

304- العدد والادوات :-

- كل العدد يجب لايد تتوافق مع اشتراطات جاسكو .
المعدات الكهربائية (شاملة كشافات الاضاءة

76ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	76	92

HSE MANUAL
3.4 Tools and Equipment

- All equipment must comply with Gasco HSE regulation

Electrical Equipment (inc. Hand Torches)

- Electrical equipment includes mains powered equipment, lamps, portable tools, flexible cables, switch gear motors, battery powered equipment, electrical equipment powered by diesel or petrol driven engines, etc. Electric equipment used inside company production facilities must be properly certified.
- All electrical equipment before being used in the vicinity of the installation must be approved in writing by company or it's designate.
- It is contractor's responsibility to Install, use & maintain all portable electrical equipment in its possession in safe and good condition.
- When not in use, it is contractor's responsibility to ensure that all portable electrical equipment is isolated from the mains.
- Special attention has to be given to the good and safe working condition of flexible cables (welding machines) and equipment that might cause sparks particularly if not properly maintained (e.g. switches, relays, etc.).
- All electrically operated hand tools are subject to inspection by company at all times and a minimum of once every six months.
- The use of (spark producing) torches is strictly forbidden within the limits of existing installations unless specifically authorized by company.
- All portable electrical lamps shall have: proper protection against electrical defects and be earthed adequate cover against accidental damage and shall be gas proof

(المحمولة)

- المعدات الكهربائية شاملة العدد التي تدار بالكهرباء ,المصابيح,العدد اليدوية , الكابلات , المفاتيح , المواتير, المعدات التي تدار بالبطاريات , المعدات الكهربائية التي تدار بمولدات الديزل أو البنزين الخ . المعدات الكهربائية التي تستخدم داخل مناطق التشغيل يجب أن تكون معتمدة .
- قبل اى معدات كهربية بجوار اى منشآت أو تركيبات خاصة بالشركة يجب أن يتم الموافقة عليها بتصريح كتابي من الشركة
- المقاول مسئول عن تركيب / استعمال/ صيانة كل العدد الكهربائية المتنقلة والتي فى حيازته بصورة أمنة وحفظها بصورة جيد
- المقاول مسئول عن التأكد من أن كافة العدد والادوات الكهربائية تم فصلها من المصدر الرئيسى فى حال عدم الاستخدام.
- يجب أن يضع المقاول اهتماما خاصا بالتأكد من حالة وأمان كابلات التوصيل (مثل ماكينات اللحام) . أو أية أدوات من الممكن أن ينتج عنها شرر إذا لم يتم صيانتها بصورة جيدة (مثل المفاتيح)
- كافة العدد التي تدار بالكهرباء من الممكن أن تخضع للتفتيش من قبل الشركة فى اى وقت وعلى الاقل يتم التفتيش عليها مرة كل سنة أشهر.
- يحظر استخدام الكشافات التي من الممكن أن يصدر عنها شرر بالقرب من مناطق التشغيل الا اذا تم استصدار تصريح من جاسكو.
- أية كشافات متنقلة يجب أن يتوافر فيها الاتى :- حماية مناسبة نجاة الاعطاب الكهربائية / تاريض مناسب/ حماية ضد التلف بالخطأ ويجب أن تكون مصنعة للعمل فى مناطق الغاز.
- يجب أن يتأكد المقاول من أن كافة العدد والادوات التي تدار بطاقة كهربية أكبر من 42 فولت بها وحدات

77ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	77	92

HSE MANUAL

• Contractor shall ensure that all electrical power tools with higher than 42 volts supplies are protected by Earth Leakage Breakers rated at 30 mA.

Cranes and other Lifting Equipment

• No crane, forklift or other loader is allowed to work at the site without a valid Certificate of calibration issued by a 3rd party. Recent certificate are required at start of construction. Contractor will be required to also have its cranes and loaders checked regularly and re-certified every 12 months and to hand over copies of certificates to company.

• Mobile jib crane, Side booms and " A" Frames are not allowed to work in the vicinity of overhead power lines unless a Safe Working distance is maintained. Safe Working distance is defined as a total length of the jib plus 3 meters. Where crossing overhead lines "goalpost" safety barriers shall be erected each side of the crossing.

• Contractor shall prepare hoisting/rigging studies or drawings for approval by company for any work which company shall designate.

• All cranes shall be fitted with an audible warning device to sound when the crane is overloaded and to be fitted with limit switch for the traveling block.

• An up to date register of all lifting equipment shall be maintained, safe load and radius charts shall be available for all lifting equipment

• All operators of lifting equipment shall be trained as appropriate to the satisfaction of company.

• All lifting hooks shall have a safety latch.

• Contractor shall ensure that a control procedure for all lifting equipment (e.g.

حماية بقدرة 30 مللى أمبير.

الأوناش وعدد وأدوات الدفع

• غير مسموح بعمل أى ونش أو ونش شوكة أو أية معدة رفع أخرى فى مواقع أخرى فى مواقع الشركة بدون شهادة معايرة من جهة ثالثة (محايدة). يجب أن تكون شهادات المعايرة سارية قبل البدء فى العمل كما يجب أن يقوم المقاول بعمل إعادة فحص للأوناش ومعدات الرفع وإعادة معايرتها مرة كل 12 شهر على الأقل وإرسال الشهادات الجديدة للشركة.

• الأوناش ذات الوصلات الطائرة والسايد يوم غير مسموح لها بالعمل بالقرب من أى كابلات علوية إلا بعد ترك مسافة أمنه . (المسافة الامنه عبارة عن أقصى طول للبوامة + 3 متر) وفى حالى عبور الخطوط كهربية علوية يجب وضع حواجز امان على جانب منطقة العبور.

• يلتزم المقاول دراسات و/ رسومات لعمليات لرفع للحصول على موافقة الشركة فى عمليات رفع خاصة.

• يجب أن يزود كل ونش بوسيلة تحزير صوتى فى حالة حدوث حمل زائد على الونش وكذلك يزود الونش بمتفتح تحديد الحمل (اوفرلود).

• يجب توفير سجل لكافة معدات الرفع وجداول التحميل لكافة المعدات وتحديث ذلك بصفة مستمرة.

• يجب أن يكون جميع مشغلى معدات الرفع مؤهلين ومدربين طبقا واشترطات جاسكو.

• كا الخطاطيف يجب أن تكون مزودة بقل الامان الخاص بها .

• يجب أن يتأكد المقاول من أن إجراءات السيطرة والتحكم فى كل معدات وادوات الرفع (ويرات / صبانيات /) مطبقة ومتبعة بالطريقة التى يحكم معها التأكد من أن كل المعدات مختبرة وكذلك الفترات التى يحكم استخدامها فيها بامان.

• يجب أن يتأكد المقاول من أن كل معدات الرفع لها شهادات معايرة من جهة ثالثة (محايدة).

78ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	78	92

HSE MANUAL

slings, shackles, etc.) is introduced and followed so that it can be verified that the equipment has been tested and what period it can be safely used.

- Contractor shall ensure that lifting equipment is certified by third party.
- Contractor shall use a colour coding system for all lifting equipment to identify operational and inspection schedules

Gas Bottles

- All cylinders are to be carefully stacked in vehicles so as not to project beyond the sides or ends of the vehicle.
- Protecting caps must be properly screwed on.
- Adequate means must be taken to prevent cylinders from falling off the vehicle.
- Cylinders shall not be allowed to drop or come into violent contact with one another.
- Identification mark must be adequately painted around the neck of cylinders as per color code
- Hoses shall be examined frequently to ensure that they are free from cuts, cracks, burns, and excessive wear and shall be pressure tested. Binding of hose connections with wire is strictly prohibited.
- When oxygen cylinders are transported on trucks together with hydrogen, acetylene or LPG cylinders they must be separated by steel plates and the cylinder outlets must be directed away from other cylinders.
- All cylinders must be stored away from direct rays of the sun, sources of heat and electricity.
- Acetylene, hydrogen and LPG cylinders shall be transported and stored upright, (not stacked) and properly secured to prevent them from falling.
- Acetylene, oxygen, hydrogen and LPG cylinders must be stored separately.
- Tarpaulin or any other covers shall not

- يجب أن يطبق المقاول نظام التوكيد اللوني لمعدات وادوات الرفع لحديد فترات الفحص والتشغيل .

أسطوانة الغاز :-

- يجب رص الاسطوانات جيدا فى العربات لتفادى سقوطها في/من العربة
- يجب توفير غطاء لحماية لكافة الاسطوانات .
- يجب حماية الاسطوانات بوسيلة مناسبة لحمايتها من السقوط أثناء النقل .
- يجب المحافظة على حماية الاسطوانات من الصدمات أو من التخبط بعضها ببعض.
- يجب الالتزام بنظام التوكيد اللوني طبقاً ونوع الغاز بالاسطوانة وذلك بدهان المنطقة حول صمام الاسطوانة.
- يجب فحص الخراطيم بصفة مستمرة للتأكد من خلوها من أى قطع أو شقوق أو حروق أو التآكل ، كما يجب عمل اختبار ضغط لها. يمنع منعاً باتاً ربط اى وصلات فى الخراطيم بواسطة أسلاك.
- عند نقل اسطوانات اكسجين مع اسطوانات هيدروجين / استيلين / LPG فى نفس السيارة يتم الفصل بينهم بواسطة حاجز صلب مع مراعاة توجيه فتحة خروج الغاز منها اتجاه بعيد عن الاسطوانات الاخرى
- يجب تخزين كافة الاسطوانات بعيد عن أشعة الشمس المباشرة أو اى مصدر حرارى أو كهربى
- يجب نقل وتخزين اسطوانات الهيدروجين / استيلين / البوتاجاز فى الوضع القائم (الرأسى) وتأمينها لحمايتها من السقوط.
- يجب تخزين أسطوانات الهيدروجين / استيلين / البوتاجاز بصورة منفصلة.
- اى غطاء لا يجب أن يكون ملاصق مباشرة مع الاسطوانات حمايتها من أشعة الشمس.
- الاسطوانات واية ملحقات بها مثل المنظمات / الخراطيم / الرشاشات يجب أن تحفظ بعيداً من اى زيوت أو شحوم .
- كل اسطوانات الغاز المضغوطة يجب وضعها على ترولى ذو عجلتين على الاقل عند الاستخدام لتسهيل

79ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	79	92

HSE MANUAL

be used in direct contact with cylinders as protection against the sun.

- Cylinders and fittings such as regulators, hoses and nozzles must be kept away from all sources of oil and grease.
- All compressed gas cylinders in use must be mounted on a trolley (e.g. a 2 wheel trolley) to facilitate removal of these cylinders incase of emergency.
- Gauges for oxygen, nitrogen or hydrogen cylinders shall have a dial capable of reading not less than 210 bars.
- Gauges for acetylene cylinders shall have a dial capable of reading not less than 42 bars.
- All regulators and pressure gauges shall be suitable for industrial use and shall be checked regularly to ensure that they are functioning properly.
- Red hose shall only be used for acetylene, hydrogen, LPG, other combustible gases & black or blue hose for oxygen and nitrogen.
- Hoses must be equipped with non-return valves.
- Valves or fittings shall not be lubricated and red lead or any other jointing compound shall not be used on the valve and regulator fittings.
- Cylinders shall not be allowed to come into contact with electrical apparatus or live wires such as welding cables.
- Sparks, flames, slag, welding and cutting apparatus must be kept away from cylinders.
- Cylinder valves shall be closed immediately when gas is not required or when cylinder is empty and hoses depressurized.
- Hoses and regulators shall always be disconnected from the cylinders before transporting them.

حركتها في حالة حوث اى طارئ.

- العدادات الخاصة بالاسطوانات الاكسجين / النيتروجيت / الهيدروجين يجب أن لا تقل عن 210 بار.
- العدادات الخاصة بالاسطوانات الايثلين يجب أن لا تقل عن 42 بار.
- يجب أن تتلائم المنظمات وعدادات الضغط مع الاستخدامات الصناعية ويجب فحصها بصفة دورية للتأكد من سلامتها.
- الخراطيم الحمراء يجب أن تستخدم فقط للايثيلين / هيدروجين / البوتاجاز أو اى غاز قابل للاشتعال بينما الاسود يستخدم للأكسجين والنيروجين . وكل الخراطيم يجب أن تزود ببلف عدم رجوع.
- يجب تزويد كافة الخراطيم ببلوف عدم رجوع
- يجب تشحيم أو دهان بالاكسيد الاحمر اى بلوف أو تركيبات غير مسموح باستخدام اى وصلات فى البلف أو المنظم
- يحظر ملامسة الاسطوانات لاية أجهزة كهربية أو كابلات (مثل كابلات اللحام)
- يجب ابعاد الاسطوانات عن اى شرر أو ابخرة أو لحام أو معدات القطع أو اللحام.
- فى حالة نقل الاسطوانات يجب فصل كافة البلوف و المنظمات منها.
- يجب تغطية منطقة البلف بكاب الحماية المخصص لها وذلك فى حالة عدم استخدامها.
- يجب عدم تداول الاسطوانات والايدى بها زيوت أو شحوم .
- يجب استبعاد الاسطوانات الفارغة أو الاسطوانات الغير محتاج اليها.
- يجب عدم تخزين كميات من الاسطوانات بالموقع ويجب المحافظة على عدم تخزين اكثر من كمية تكفى ليوم عمل واحد .

80ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	80	92

HSE MANUAL

- All cylinders must have the protecting caps screwed on when not in use.
- Compressed gas cylinders must not be handled with oily hands.
- Empty cylinders or cylinders no longer required shall be removed immediately from the site.
- Not more than one day's supply of compressed gas shall be kept at the site.
- If cylinder is heated accidentally or becomes hot due to excessive or severe backfire from use of faulty equipment it must be dealt with promptly as follows:

- shut valve, detach regulator or other fitting, cool by water spray, take cylinder outdoors, into open air at once (but far away from any source of flame) and immerse it, OR apply water copiously to cool, after 48 hrs open the valve fully and keep cool with water until cylinder is empty. The bottle is then dispersed off

Scaffolding:

- Contractor shall ensure that for all work at a level higher than 1.5 meters above ground level, proper scaffolding is erected.
- Scaffolding shall be built strong enough to carry all men and material under the most unfavorable loading conditions.
- A closed floor of min. 1200 mm width shall be installed provided with planks of not less than 25 mm thick, supported at the ends to prevent slipping.
- On the open sides of the scaffolding a firm and rigid railing has to be installed, rope may be used as a railing provided safety belts are worn by the men on the

- إذا ارتفعت درجة حرارة الاسطوانة نتيجة التسخين المباشر أو بالخطأ أو اى لهب مكشوف يجب اتباع الخطوات الاتية:-

- تفريغ الاسطوانة بفتح البلف على اخره مع تبريد جسم الاسطوانة بالماء حتى يتم تثبيت الغاز غلق البلف ، فصل المنظم أو اى تركيبات اخرى، تبريد الاسطوانة برش الماء عليها، إفراج الاسطوانة لخارج الموقع ، وضع الاسطوانة فى الهواء الطلق بعيداً عن اى مصدر حرارى ، غمر الاسطوانة بالماء. بعد 48 ساعة يتم تفريغ الاسطوانة بفتح البلف على اخره مع تبريد جسم الاسطوانة بالماء حتى يتم تثبيت الغاز.

السقالات :-

- يجب على المقاول توفير سقالات مناسبة لاية أعمال على ارتفاع اكبر من 1.5م من سطح الارض.

- يجب بناء السقالات بقوة كافية لحمل الاشخاص والمعدات المتوقع حملهم فوقها تحت كل الظروف.

- يجب تركيب سطح معلق بعرض لا يقل عن 120سم بالواح خشبية سمكها لا يقل عن 2.5 سم مدعم من الجانبين لمنع التزحلق.

- فى الجانب المفتوح من السقالة يجب تثبيت درابزين قوى ويمكن استخدام الحبال كدرابزين وذلك فى حالة توفير احزمة الامان للعاملين فوق السقالة للحماية من خطر السقوط.

- فى الجانب المفتوح من السقالة يجب تركيب لوح بارتفاع لا يقل عن 30سم لمنع العدد والادوات من السقوط.

- يجب تدعيم السقالة بصورة جيدة.
- يجب أن تكون السقالة مصنعة من الصلب ومزودة بأقفال معتمدة وكل نهايات الارجل يجب أن تزود بقاعدة من الصلب لمنع انغراز

81ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	81	92

HSE MANUAL

scaffolding.

- On the open sides of the scaffolding, a board is to be installed of a minimum height of 300 mm to prevent materials, tools, etc. from falling off the scaffolding floor.
- Scaffolding must be properly braced.
- Scaffolding material must be of steel with approved clamps, while all posts must be fitted with proper steel base plate to prevent settlement scaffolding clamps are subject to approval of COMPANY or its designate.

- Scaffolding material for erection and/or use by Contractor shall not be used unless Contractor has checked and approved the scaffolding to comply with the above mentioned rules.
- Hoisting scaffolds need COMPANY'S or designates approval before being used.
- Hoisting scaffolds shall be only connected to a safe and secure connecting point

Ladders

- Ladders shall be made from steel or aluminum and of plant made fabrication. Home made wooded ladders shall not be used.
- Ladders with treads nailed to the strings or with faulty or unsound steps/posts or other parts are strictly forbidden.
- Defective rungs are under no account to be lashed with rope or wire.
- Normal length of any ladder shall not exceed 4 meters. In circumstances when a longer ladder may be required, the advice and permission of COMPANY must be obtained.

3.5 Excavations

- An Excavation Permit is to be issued by the COMPANY before any excavations

قوائم السقالة في التربة . من الممكن أن تخضع اجزاء السقالة للتفتيش من قبل الشركة أو اى جهة تحولها الشركة قبل الموافقة عليها.

- اى اجزاء أو مواد ستستخدم فى بناء سقالات يجب على المقاول عدم استخدامها من قبل التأكد من انها مطابقة لكافة الاشتراطات السابقة.
- السقالات المعلقة تحتاج لموافقة الشركة أو من تحولة الشركة للعمل بها.
- يجب أن تثبت فى نقط بثبيت امانة

السلام :-

- يسمح فقط باستخدام السلم المصنوعة من الصلب أو الالومنيوم أو الخشب المصنع , ويحذر استخدام السلالم الخشبية المصنعة يدويا
- يحذر استخدام السلالم المثبتة درجاتها بواسطة مسامير فى العوارض الجانبية أو التى بها عيوب فى اى من اجزائها .
- يمنع منعاً باتاً ربط الدرجات المكسورة بواسطة احبال أو اسلاك .
- الطول الطبيعي لأي سلم يجب الا يتجاوز 4 م . وفى حالة الحاجة الى استخدام سلم اطول من ذلك يرجع الى الشركة حيث يجب الحصول على موافقة منها قبل استخدام هذا النوع من السلالم

أعمال الحفر :

- يجب استصدار تصريح بالحفر من الشركة فى حالة القيام بأية أعمال حفر قريبة من خطوط الغاز بمسافة داخل نطاق الشركة على بعد 2 م خارج نطاق الشركة 3-5 م.
- يجب حماية الافراد الذين يعملون داخل الترنشات لحفر التربة/ الطفلة / الرمل أو اى مادة مشابه ضد انهيار التربة أو الاجسام الساقطة مثل الحجارى / الطوب/ الخرسانة / العدد / المهمات/ (...) ، والطريقة الوحيدة المعتمدة لهذه الحماية هى بعمل دعامات لتقوية جدار الترنش من الداخل أو على الاقل المنطقة التى يعمل بها الافراد.

82ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	82	92

HSE MANUAL

internal fence within 2 m by hand tool but in external fence within 3-5 m. of the pipeline is required.

- Men working in trenches, excavating soil, clay, sand and similar material must be protected against earth slides, falling objects {stones, bricks, concrete, tools, materials, etc.) and excessive water build up in trench. The only approved protection method is by shoring and

bracing the entire trench (or at least that part where men are working).

- Shoring must be strong / rigid and without holes or openings, e.g. corrugated metal or timber sheets, properly braced with heavy timber structure.

- Excavated earth is not to be stored close to trench edges as this will promote the danger of earth slides, a minimum distance is to be strictly adhered to between the center of the pipe and the trench of 1 1/2 times the depth of the trench.

- A strip of 1 meter on both sides of the trench shall be leveled and cleared of all loose objects such

- as stones, bricks, concrete, pipes, valves, timber, etc. This strip may be used for short period

storage of materials to be used in the trench but only if this material is stored in a safe manner, so

that there is no chance that it may fall into the trench.

- All pits, benches, excavations must be roped off if the area is used by other workers or when there is the possibility of other people entering the area.

- على أن تكون هذه الدعامات قوية وصلبة ولا يوجد بها أى فتحات ومن أمثلة الدعامات (المعدنية – الألواح الخشبية المتينة) .

- يجب عدم تخزين نواتج الحفر بالقرب من الحفر لأن ذلك من الممكن أن يؤدي الى حدوث انهيار التربة ويجب المحافظة على مسافة تساوى أو تزيد عن 1.5 عمق الترنش وذلك من منتصف الماسورة والترنش.

- يجب المحافظة على شريط بعرضى ام من جانبي الحفر .

- يكون خالى من اية مواد منزلقة مثل الحجارة / الطوب/ العدة/ المواسير/ الخرسانة / الخشب/ (...) ومن الممكن أن يستخدم هذا الشريط للتخزين المؤقت للمواد التى سيتم استخدامها داخل الترنش وذلك لفترات قصيرة بشرط تخزين هذه المواد بصورة آمنة لضمان عدم سقوطها داخل الترنش.

- كل الحفر والترنشات يجب تأمينها بعمل كردون حولها بحبال اذا كانت المنطقة بها عمال آخرين أو فى حالة احتمال دخول أفراد للمنطقة.

- يحظر مشى الافراد بالقرب من حافة الحفر حتى لا يؤدي ذلك الى حدوث انهيار بالتربة

- نظافة المكان (غير منزلق) حتى لا يسقط أو ينزلق أى شخص.

- ويجب المحافظة على المعابر المؤقتة فوق الترنش الحفر يجب الا يقل عرضها عن 60سم ويجب أن تكون بقوة كافية لتحمل الاشخاص ويكون لها درابزين من جهة واحدة

- كل الانشطة بما فيها استخدام المفترعات أن

83ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	83	92

HSE MANUAL

- Workmen shall not walk too close to the edge of excavations (earth may slip in)
- and areas shall be kept sufficiently clean and tidy (non slippery) to prevent workmen from falling or slipping.
- Crossings (temporary) over the trenches must be at least 600 mm wide and sufficiently strong with railing on one side.
- All activities involving the use of explosives shall be carried out In accordance with N.F.P.A 495, latest edition. Contractor shall submit full details of proposals to company for approval.

3.7 Fire Fighting

- Contractor shall provide and maintain sufficient and adequate fire fighting devices on site as are in the reasonable opinion of company necessary to afford adequate protection in case of local fire and shall ensure that its personnel are advised as to the action to be taken in case of fire. All vehicles/equipment used by contractor for the work shall be equipped with fire extinguisher of suitable capacity.

3.8 Vehicles and Driving

Company Vehicle and Driving Regulations

- All vehicles and driving shall comply with company HSE procedure guide - GASCO regulations.
- The contractor is required to provide a list of the vehicles and drivers that will be used for traveling into the interior and are in compliance with the company requirements.

Vehicle Specifications, Fitting and Equipment

وجد يجب أن تتم بالتوافق مع الكود 495 على أن يقوم المقاول بتقديم كافة التفاصيل لشركة جاسكو للاعتماد

مكافحة الحرائق :-

- يجب أن يقوم المقاول بتوفير ادوات كافية لمكافحة الحرائق بالموقع وذلك وفقاً لوجهة نظر الشركة وذلك لتوفير الحماية في حالة الحرائق المحدودة كما يجب أن يتأكد المقاول أن العمالة التابعة له تم توعيتهم بالاجراءات الواجب اتخاذها في حالة حدوث حريق. كل السيارات والمعدات التي يستخدمها المقاول يجب تزويدها بطفايات حريق بسعة مناسبة.

السيارات والقيادة :-

سيارات الشركة وقواعد القيادة

- يجب أن يتوافق السائقين وقائديها مع اشتراطات السلامة الخاصة بالشركة.
- يجب أن يقوم المقاول قائمة بالمركبات والسائقين الذين سوف يدخلون مواقع الشركة ويجب أن يتوافقوا مع اشتراطات الشركة.

مواصفات المركبات والتجهيزات والعدد:-

- يجب أن تكون امركية ذات سعة وتصميم مناسبين لطبيعة المهمة والعمل الموكل لهما.
- مركبات النقل الثقيل / الاوناش / معدات الرفع يجب أن تزود بحزام امان لكل مقعد بها .
- يجب استخدام الاطارات من النوع الرديال الالمجدول التيوبلس فقط بما في ذلك الاطار الاحتياطي وذلك في اي حركة. كما يجب الالتزام بتركيب إطارات من نفس المقاس كما في نفس المركبة. يجب استخدام إطارات من نفس النوع والمواصفات على نفس المحور.

84ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	84	92

HSE MANUAL

- Vehicles shall be of adequate capacity and a design suitable for the WORK to which they are allocated.
- Heavy trucks, cranes and lifting equipment shall be fitted with seat belt for each seat
- Radial ply tubeless tires only to be used including the spare wheel(s) on any vehicle. All tires fitted to a vehicle shall be of the same size. Same make/specification of tires must be fitted on any axle. Tire pressures and minimum acceptable tread shall be as per manufacturer's specification. Remold or remade tires of any description shall not be used.
- All vehicles shall be equipped with a spare wheel, and for journeys defined as Remote Areas; light vehicles shall be equipped with a minimum of two spare wheels, tools, including those to change a wheel, dry powder extinguisher of quantity and capacity suited to the size and purpose of the vehicles shall be installed. Vehicles shall have a first aid kit and adequate supply of bottled water for the planned journey.
- All heavy goods, passenger service and plant equipment vehicles shall be fitted with audible alarms for reversing
- All fuel tankers shall be fitted with anti static bars and bonding strips.
- Vehicles shall be fitted with two (left and right) outside mirrors.
- If any of above safety devices are not fitted, or if the vehicles have any other deficiencies, which could affect the safety of personnel, the vehicles will not be used until the deficiencies have been corrected, and confirmed as such to company's satisfaction. Non-compliance will result in issuance of a HSE Violation Notice.
- Fitting of headrests is recommended for

ضغط الاطار والجزء الملامس للأرض يجب أن يكون وفقاً لمواصفات المصنع ويحظر استخدام الاطارات المعاد تصنيعها أو المعاد تشكيلها.

• يجب أن تزود كل مركبة بإطار إحتياطي وفى حالة السفر لمناطق أو طرق متعارف على انها نائية يجب تزويد المركبات الخفيفة بإطاريين احتياطيين على الاقل ، وادوات بما فيها عدة تغيير الاطارات ، وكذلك طفاية حريق بسعة مناسبة لطبيعة ونوع المركبة.

• كل مركبات المعدات الثقيلة وخدمات الركاب ومركبات الموقع يجب تزويدها بسارينة رجوع للخلف.

• مركبات نقل الوقود يجب تزويدها بوسيلة لتفريغ الكهرباء الاستاتيكية وكذلك (**bonding strips**)

• يجب أن تزود كافة المركبات بمرايات جانبية (يمين ويسار)

• فى حالة عدم توافر ايا من الاشتراطات السلامة السابقة فى اية مركبة أو وجود عيوب اخرى من الممكن أن تؤثر على سلامة الركاب فإنه يمنع استخدامها لحين اصلاح هذه العيوب وموافقة الشركة على طريق

• يجب أن تزود المركبات تزود كل مقعد بمساند للرأس.

حالة المركبة

• يجب صيانة كافة المركبات بصفة دورية على الاقل الالتزام بما اقرة المصنع (للمحافظة على حالتها وذلك بواسطة مختصين . يجب عمل فحص ميكانيكى شامل التعليق والاجزاء الميكانيكية وذلك بواسطة جهة مختصة مرتين فى العام أو كل 25 الف كم ايهما اقرب أو يجب أن يحتفظ المقاول بسجل لكافة الصيانات التى تتم للمركبات ويجب أن تكون هذه السجلات متاحة فى حالة طلبها للمراجعة من قبل الشركة فيجب عدم استخدام المركبة حتى إصلاح هذا العيب .

85ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	85	92

HSE MANUAL

all passenger seats.

Vehicle condition and Care:

- All vehicles shall be maintained to a high standard by the appropriate service checks at a frequency of at least those recommended by the manufacturer. A full vehicle check, including vehicle suspension and mechanical integrity, should be carried out by a reputable agency twice each year or every 25,000 km's whichever comes first. CONTRACTOR shall maintain vehicle service records which should be available for inspection by COMPANY.
- Any fault which may affect the roadworthiness of a vehicle or the safety of its driver and/or passengers shall be rectified before the vehicle is used.
- All vehicles shall be maintained in a safe condition. Repairs shall be carried out only by a reputable agency. Temporary repairs shall only be carried out to allow a vehicle to be moved to a workshop. Temporary repairs shall not affect the safety of the vehicle. A vehicle shall be checked after every repair before releasing it to the user.
- The driver of any vehicle shall before any journey ensure that the vehicle is in good mechanical condition. In particular the following shall be free from damage and excessive wear, operating correctly or at the correct level {as appropriate):
 - Steering
 - Foot and parking brakes. - seat belts (including test on the inertia system)
 - Horns
 - Headlights, tail lights, stop lights and turn indicators
 - Rear view mirror
 - Windshield wipers and washers
 - Windshield and all windows
 - Fluid levels in engine, battery, radiator and break/clutch reservoirs)

• اى عيب من الممكن أن يؤثر على حالة السيارة على الطريق ومن الممكن أن يؤثر على سلامة الركاب فيجب عدم استخدام المركبة حتى اصلاح هذا العيب .

• يجب المحافظة على كافة المركبات بحالة جيدة. اى اصلاحات يجب أن تتم فقط بواسطة جهة معتمدة .
الاصلاحات المؤقتة يجب أن تطبق فقط للسماح للسيارات أن تنتقل الى الورشة للاصلاح مع مراعاة عدم تأثير هذه الاصلاحات المؤقتة على امان المركبة , كما يجب فحص السيارة بعناية بعد الاصلاح قبل التصريح باستخدامها .

• على سائق كل مركبة التاكد من حالتها قبل القيام باى مامورية , وعلى الاقل يتاكد من سلامة الاتى وانه يعمل بصورة جيدة :-

- عجلة القيادة
- الفرامل وفرامل اليد
- احزمة الامان
- الضوء العالى والعادى والخلفى والاشارات
- الكلاكسات
- مرآة الرؤية الخلفية
- المساحات والزجاج الامامى
- الزجاج الامامى والشبابيك
- قياسات السوائل مثل الزيوت / البطارية / الماء (الراديتير) / الفرامل (...)
- العادم

• علاوة على ذلك يجب فحص الطفاية والتاكد من سلامة ضغط الطفاية / قيادة الامان / موضع تثبيت الطفاية . اى عيوب فى الطفاية يجب الابلاغ عنها فورا .

تشغيل واستخدام المركبة

• يجب نقل الافراد / المهمات بصورة سليمة وقانونية طبقا لاشتراطات السلامة والصحة المهنية وحماية البيئة الخاصة بالشركة والقانون المصرى .

86ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	86	92

HSE MANUAL

- Exhaust.
- In addition, a check shall be made of the fire extinguishers) to ensure that each item is at the correct pressure, is securely located in the vehicle and has the safety pin correctly fitted. Any defects shall be reported immediately.

Vehicle Operation and Use.

- Passengers and/or material shall be transported in a safe and legal manner in accordance with the requirements of these company HSE Regulations and Egyptian Laws.
- No vehicle in an unsafe condition shall be driven.
- No vehicle shall be driven without a valid Vehicle Registration Card and unless the driver holds the appropriate driving license /permit
- Saloon-type vehicles are allowed on the blacktop roads in company's Concession Areas when approved by company but not on graded roads.
- Drivers shall wear seat belts at all times. Passengers shall wear seat belts at all times when traveling in any seat of a vehicle with belts fitted.
- Passengers shall only be carried in the passenger compartment of a vehicle.

Driving and Driver Training:

- The contractor and the contractor's subcontractor's personnel shall conform to the COMPANY'S HSE Rules and Standards for driving on roads including but not limited to the use of safety belts, adhering to maximum speeds and safe behavior in dust clouds and adverse road conditions. Driving at night shall be limited to emergencies and only by written agreement with the company representative. The contractor's

- غير مسموح بتشغيل اى مركبة حالتها غير امنة .
- غير مسموح بتسيير اى سيارة بدون رخصة سارية المفعول وكذلك رخصة قيادة أو تصريح تسيير للسائق .
- السيارات الملاكى (الصالون) مسموح باستخدامها فقط على الطرق الاسفلتية فى نطاق عمل الشركة غير مسموح بها فى الطرق غير الممهدة .
- يجب التزام السائقين بارتداد احزمة الامان وكذلك الركاب يجب أن يلزموا بارتداد احزمة الامان فى اى مقعد من مقاعد السيارة طالما مجهز بحزام امان .
- يجب عدم نقل اى ركاب فى غير المكان المخصص لهم بالسيارة .
- القيادة وتدريب السائقين
- يجب أن يلتزم عمالة المقاول ومقاولى الباطن باشتراطات الشركة الخاصة بالقيادة على الطرق شاملة استخدام حزام الامان / الالتزام بالسرعات المقررة / الالتزام بتعليمات الامان فى حالة القيادة فى الاجواء ذات الرؤية المنخفضة . غير مسموح بالقيادة الليلية الا فى حالات الطوارئ اوبتصريح كتابى من ممثل الشركة . يعتبر مديرى المقاول مسئولية عن الالتزام بتطبيق هذه التعليمات .
- يجب أن يكون لدى كل سائق رخصة قيادة تبعا لنوع المركبة التى يقودها وممنوع منعا باتا قيام اى شخص بقيادة مركبة غير مؤهل لقيادتها .
- جب أن يحضر كل السائقين التابعين للمقاول ويقدمون خدمات للشركة تدريب القيادة الامنة لمدة يومين بالشركة على حساب المقاول . كل السائقين الذين اتموا بنجاح برنامج التدريب على القيادة الامنة واصبحوا صالحين لقيادة سيارات الشركة سيتم اصدار تصريح قيادة لهم ون قبل الشركة . السائقين الذين لا يحملون تصريح القيادة الخاص بالشركة غير مسموح لهم بقيادة سيارات المقاول ويجب استبدالهم

87ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	87	92

HSE MANUAL

Management shall be responsible for enforcing these standards.

- All drivers shall hold a valid driving license for type (s) of vehicle they intend to drive No person shall drive any vehicle unless fit to do so.

- All drivers performing tasks on its behalf shall complete a 2-day defensive driving training course given by a COMPANY-approved training provider at contractor's expense. All drivers who have completed the defensive driving training and have been satisfactorily assessed as competent drivers will be issued with a special driving permit. Drivers who do not hold this special driving license will be prohibited from driving under this Contract and shall be replaced by competent and licensed drivers at contractor's expense. Contractor drivers will be required to repeat defensive driver training every 2 years under this Contract

- All drivers shall wear seat belts and ensure all passengers are wearing their seatbelts. Passengers who do not wear seatbelts and the vehicle driver will be dismissed by company and shall be replaced at contractor's expense.

- All drivers shall obey maximum speed limits and temporary speed restrictions or other signs at road markers. Where adverse conditions prevail drivers shall reduce speed accordingly

- Contractor shall ensure that his personnel do not drive any vehicle if they are under the influence of alcohol or drugs or any medication which could impair their ability to drive.

- Night driving is prohibited unless prior written approval is given by company authorized representative.

يسائقين مصرح لهم بالقيادة من قبل الشركة وذلك على حساب المقاول ويجب استبدالهم يسائقين مصرح لهم بالقيادة من قبل الشركة وذلك على حساب المقاول . سيتم تكرار التدريب على القيادة الامنة لكافة السائقين كل سنتين خلال فترة العقد .

- يجب أن يلزم كافة السائقين بارتداء احزمة الامان كما يجب أن يتأكد من التزام كافة الركاب بارتداء حزام الامان ستم استبعاد فورا واستبداله باخر وذلك على حساب المقاول .

- يجب أن يلتزم كافة السائقين بالسرعة القصوى وى سرعات مقرررة فى الاماكن الخاصة أو وى ارشادات أو تعليمات خاصة بالطريق . وفى حالة الظروف الجوية الغير مواتية يجب على السائق خفض السرعة وفقا لحالة الطريق

- يجب أن يتأكد المقتول من عدم قيام اى شخص تابع لة بقيادة اية مركبة تحت تاثير الكحوليات أو المخدرات . او اى ادوية من شأنها التأثير على الحالة الذهنية للسائق .

- القيادة الليلية ممنوعة الا بتصريح كتابى من ممثل الشركة .

- ويجب التخطيط لاي مامورية حتى يتم الوصول الى اى جهة قبل حلول الظلام .
الاشتراطات والمتطلبات الصحية
الاشتراطات الصحية :-

- تطبق كافة الاشتراطات الصحية للشركة فى كل المبانى والمواقع الدائمة التابعة للشركة أو التى يتم شغلها بواسطة عمال الشركة أو اى المقاول معتمد يعمل لدى الشركة .

- الانشاءات المتنقلة أو المؤقتة أو مواقع الانشاءات أو اى مناطق عمل اخرى تابعة للشركة أو مقاولى الشركة تخضع لنفس هذه الاشتراطات نتيجة ظروف معينة . يجب اخذ موافقة الشركة عليه قبل البدء فى التنفيذ .

88ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	88	92

HSE MANUAL

- Journey must be planned in order to ensure arrival at destination before dark

4- Health regulations and Requirements
4-1 Health regulations

- Company's Health Regulations shall apply to all buildings and other premises of a permanent nature belonging to or in occupation by company or by any contractor authorized to work on behalf of company.
- Premises of a mobile or temporary nature, construction sites and any other areas where work is carried out by company or its contractors, will also be subject to these Regulations, to the maximum feasible. Any deviations from these Regulations for practical reasons have to be approved by company prior to the initiation of the work or occupation of the temporary premises.
- The implementation and cost of the work carried out in conformity with company's health regulations shall be for the account of contractor except where an alternative arrangement has been agreed between company and contractor.
- In die events of failure by contractor to comply with these Regulations, company shall reserve the right to carry out such work as may be required to conform to the Regulations and to recover the cost of the work plus overheads from contractor.
- Exceptions, additions or amendments to these Health Regulations may be made at the discretion of company in agreement with contractor.
- The contractor shall apply COMPANY non-smoking Policy according to Executive regulation the Law 4,1994, Article " 48" .

4.2 Sanitary Conveniences.

- Sanitary conveniences includes water closets, chemical closets, and earth closets,

- تكاليف لتنفيذ وللتطابق مع الاشتراطات الصحية للشركة تكون على حساب المقاول مالم يكن هناك بديل اخر تمت الموافقة بين الشركة والمقاول .

- في حالة فشل المقاول في تلبية اشتراطات الشركة فأن للشركة الحق في القيام بتنفيذ العمل بالصورة التي تراها الشركة والجوع بالتكلفة على المقاول علاوة على اى غرامات اخرى تراها الشركة على المقاول .

- يجب أن يلتزم المقاول باى استثناء / اضافة / تعديل حدث الى الاشتراطات الصحية والتي يخضع لها نشاط الشركة .

- يجب أن يلتزم المقاول بسياسة الشركة تجاة منع التدخين طبقا والمادة 48 من اللائحة التنفيذية لقانون حماية البيئة 4 لسنة 1994 .

- 2- وسائل الصرف الصحي.
- وتشمل مياه الصرف الصحي في دورات المياه ، والمراحيض و المبال و مناضح المياه.

- في المباني أو المناطق التي بها أفراد ستزود بوسائل صرف صحي مريحة وسهلة الوصول الى الاشخاص العاملين أو المقيمين فيها .

- وسائل الصرف الصحي المقدمة يجب أن يحتفظ بها نظيفة ويجب صيانتها جيدا وفعالة وأن تتخذ الترتيبات اللازمة لتأمين الاناره والتهويه المقصورات.

3-4 الغذاء المؤسسات.

- الجدران والأرضيات والأسقف في جميع أماكن تخزين الاغذية يجب أن تكون من النوع الذي يمكن تنظيفها بسهولة.

89ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	89	92

HSE MANUAL

sanitary privies, squat latrines, bore hole latrines, urinals, lavatories and showers.

- In the case of premises or areas to which these regulations apply there shall be provided, at a place conveniently accessible to the persons employed to work or live therein, suitable and sufficient conveniences for their use.
- Sanitary conveniences provided in pursuance of the foregoing sub sections shall be kept clean and properly maintained, and effective provision shall be made for lighting and ventilating the compartments.

4.3 Food Establishments.

- The walls, floor? and ceilings in all premises where food is stored, prepared or served shall be of a finish that can be cleaned easily.
- All doors windows and other openings in food establishments shall be protected against insects and rodents.

4.4 Medical Assistance.

- Contractor shall provide an adequate number of employees trained in first aid.
- Contractor shall provide and maintain sufficient and adequate first aid Equipment at the site and advise company of the disposition of such first aid Equipment
- Contractor's personnel and facilities shall be made available to Company's personnel and to all other contractors appointed by company in the event of any accident.

• جميع الأبواب والشبابيك والفتحات الأخرى في أماكن تناول الطعام أو تخزين المواد الغذائية تتم حمايتهم من الحشرات والقوارض.

4-4 المساعدة الطبية.

- يجب على المقاول توفير العدد الكافي من الموظفين المدربين على الإسعافات الأولية.
- يجب على المقاول توفير أدوات إسعافات أولية كافية ومناسبة ومعدات الإسعافات الأولية في الموقع وتقديم بيان للشركة في كيفية التعامل مع هذه المعدات.
- يجب أن تكون متاحة لموظفي الشركة والعاملين من المقاولين في حالة حدوث أي حادث.

90ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	90	92

	HSE MANAGEMENT SYSTEM	GASCO-HSE-M
HSE MANUAL		

Annex (1)

HSE MANAGEMENT SYSTEM Procedures List

No.	Procedure Title	Code #
1	Environmental Aspects Identifications	GASCO-HSE-P-001
2	Regulatory Tracking and Analysis	GASCO-HSE-P-002
3	Setting and Tracking of HSE Objectives, Targets & Programs	GASCO-HSE-P-003
4	HSE Training	GASCO-HSE-P-004
5	HSE communications	GASCO-HSE-P-005
6	Document Control	GASCO-HSE-P-006
7	HSE Operational Control	GASCO-HSE-P-007
8	Emergency Preparedness & Response	GASCO-HSE-P-008
9	HSE Monitoring & Measurement	GASCO-HSE-P-009
10	Preventive & Corrective Action	GASCO-HSE-P-010
11	HSE Record Control	GASCO-HSE-P-011
12	HSE Management System Audits	GASCO-HSE-P-012
13	Management Review	GASCO-HSE-P-013
14	Waste Management System	GASCO-HSE-P-014
15	Risk Management	GASCO-HSE-P-015
16	Accident Investigation	GASCO-HSE-P-016

91ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	91	92

	HSE MANAGEMENT SYSTEM	GASCO-HSE-M
HSE MANUAL		

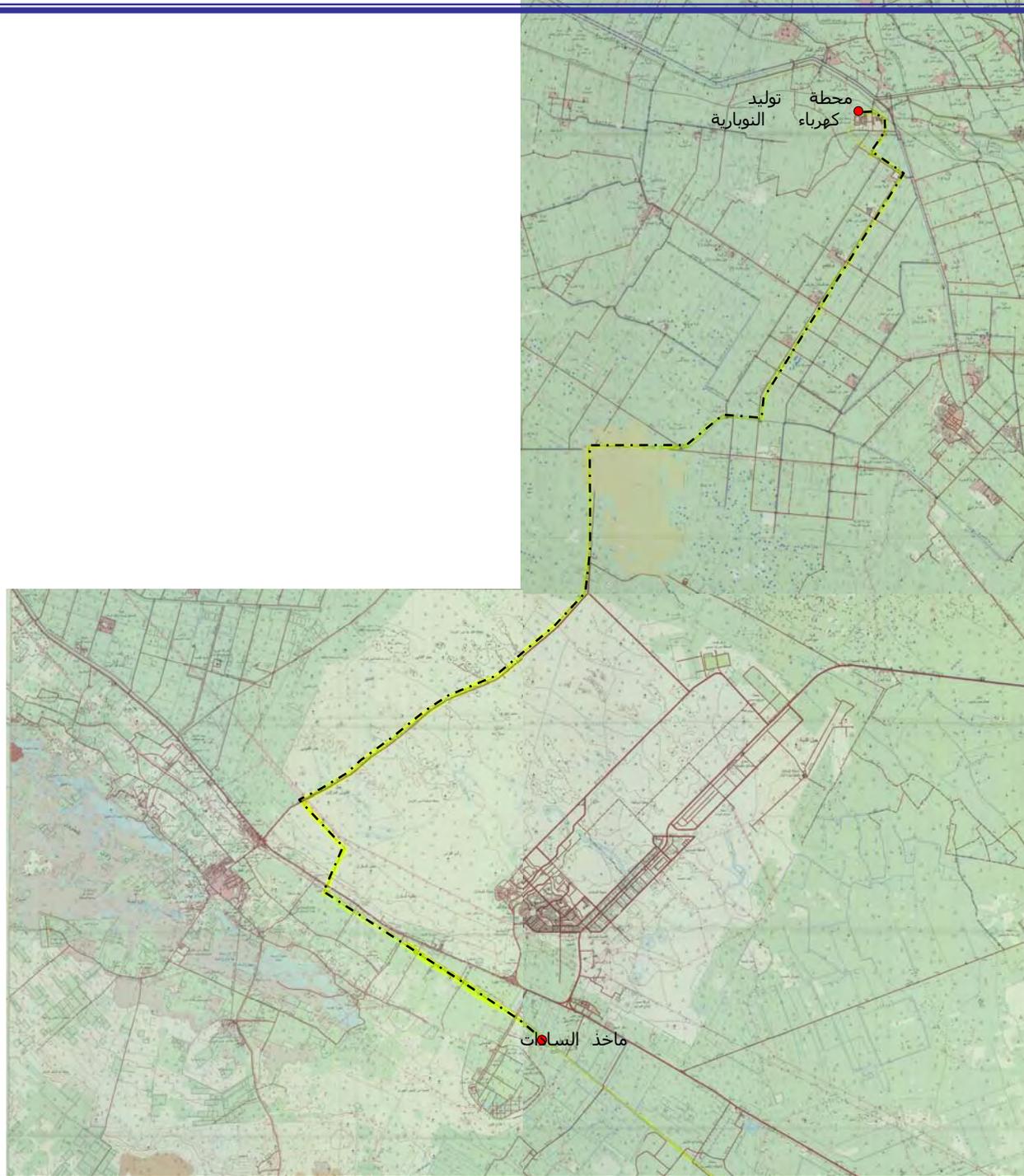
Monitor key process	L	L	L			S	S
Coordinate emergency response efforts	L	L	L			S	S
Maintain HSE Management System records (training, ...etc.)	L	L	L			S	
Coordinate HSE Management System document control efforts	L	S	S			S	S
Coordinate auditing efforts	L	L	L			L	
Perform required corrective actions	L	L	L			L	S
Review HSE Management System effectiveness	L	L	S			S	

Legend:

L = Lead Role

S = Supporting Role

93ISSUE NO:	4	PAGE	OF
ISSUE DATE:	01/12/2008	93	92



الشركة المصرية للغازات الطبيعية
جاسكو



خط النوبارية- السادات
36 بوصة 69 كم

مسار خط
الغاز



EL- NUBARIA POWER STATION (STARTING ROOM)



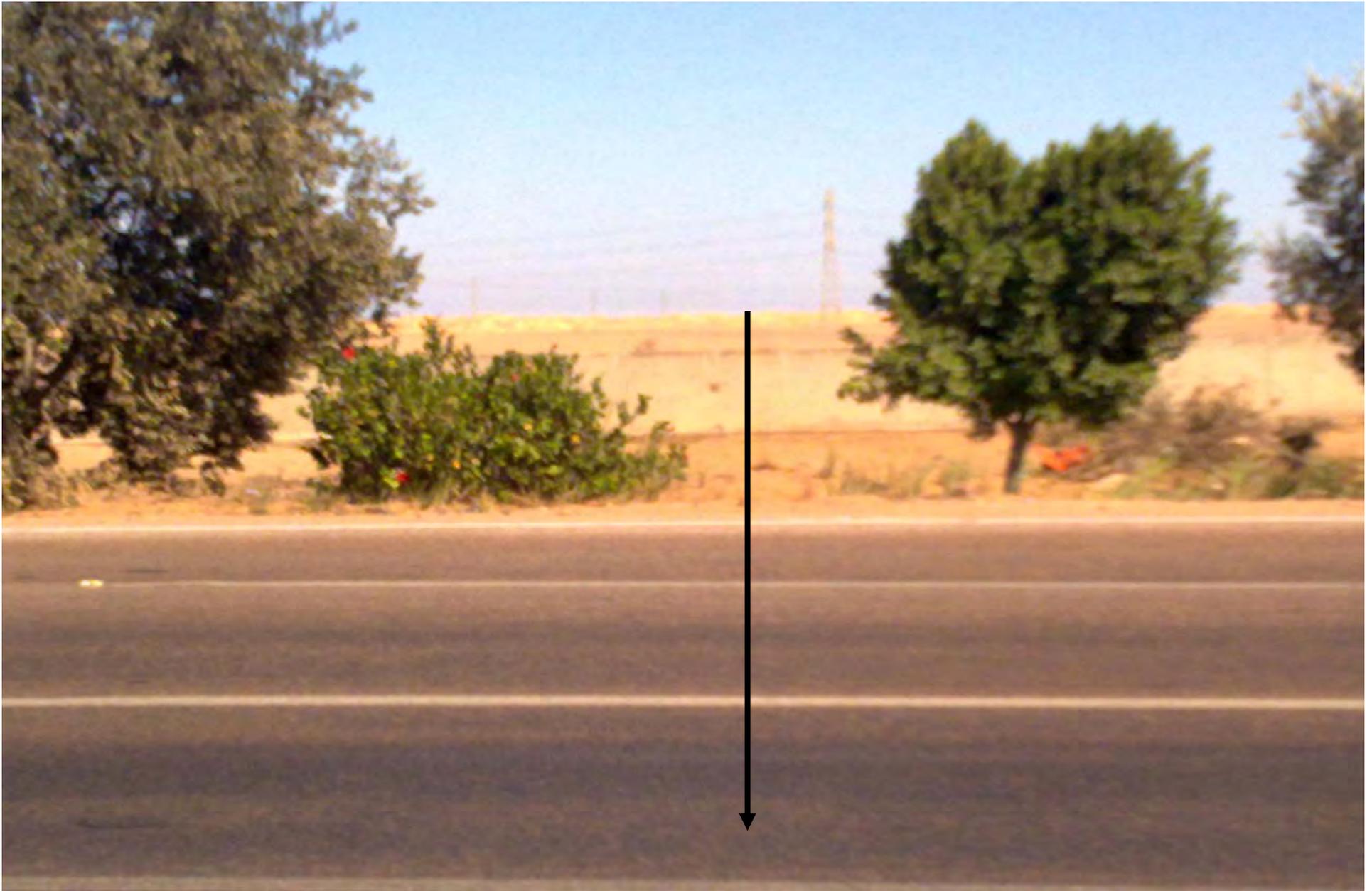
The pass of gas pipe line through el moaskr area and intersection with el nubaria power station road



The pass of gas pipe line through the main road to el nubaria



The pass of line parallel to electrical pipe line behind master rest house



Crossing of cairo-alexandria road at 125 K.M



Parallel to sumed pipe line



Line end at the off take of el sadat city valve room

El Nubaria – El Sadat List of crossing

number	Crossing	kilometer
1	Asphalted road	0.5
2	Asphalted road	1.5
3	conduit	3.5
4	Asphalted road	4.5
5	Asphalted road	7
6	Asphalted road	9.5
7	Asphalted road	11
8	Asphalted road	12.5
9	Asphalted road	14
10	Asphalted road	16
11	conduit	17.5
12	Asphalted road	20
13	Asphalted road	24
14	Asphalted road	25
15	Dust road	36
16	Dust road	37
17	Dust road	38.5
18	Asphalted road	40
19	Asphalted road	46
20	Dust road	49.5
21	Asphalted road	52
22	Dust road	53
23	Dust road	55.5
24	Asphalted road	58.5
25	Asphalted road	58.8
26	Asphalted road	64
27	Asphalted road	69
28	Asphalted road	70

El Nubaria – El Sadat List of crossing

number	Crossing	kilometer
1	Asphalted road	0.5
2	Asphalted road	1.5
3	conduit	3.5
4	Asphalted road	4.5
5	Asphalted road	7
6	Asphalted road	9.5
7	Asphalted road	11
8	Asphalted road	12.5
9	Asphalted road	14
10	Asphalted road	16
11	conduit	17.5
12	Asphalted road	20
13	Asphalted road	24
14	Asphalted road	25
15	Dust road	36
16	Dust road	37
17	Dust road	38.5
18	Asphalted road	40
19	Asphalted road	46
20	Dust road	49.5
21	Asphalted road	52
22	Dust road	53
23	Dust road	55.5
24	Asphalted road	58.5
25	Asphalted road	58.8
26	Asphalted road	64
27	Asphalted road	69
28	Asphalted road	70

جاسكو

شركة رائدة تعمل في مجال نقل وتوزيع ومعالجة الغاز الطبيعي وتهدف توجهاتها إلى رفع الأداء فيما يخص السلامة والصحة المهنية وحماية البيئة للعاملين بها و عملائها وذلك من خلال الالتزام بالأكواد الخاصة بتأمين بيئة العمل وحماية العاملين و البيئة المحيطة بمجال نشاط الشركة.

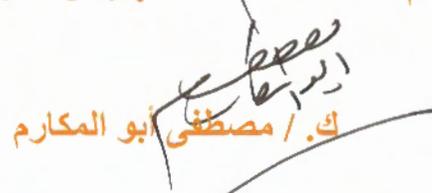
وإنطلاقاً من هذه التوجهات فإن شركة **جاسكو** تلتزم في تطبيق نظام إدارة السلامة والصحة المهنية وحماية البيئة بما يلي :-

- التوافق مع القوانين و التشريعات والأكواد العالمية المتعلقة بنشاط **جاسكو** والمختصة بالسلامة والصحة المهنية وحماية البيئة مع اتخاذ الإجراءات اللازمة لتطبيق هذه السياسة عملياً.
- التعرف على المخاطر الناشئة عن أنشطة **جاسكو** وتقييمها ووضع السبل اللازمة للتحكم فيها بهدف منع و/أو تقليل الحوادث و الإصابات و المؤثرات والمخاطر الأخرى للحد الأدنى عملياً من خلال إتباع أفضل الوسائل التكنولوجية المتاحة والطرق الآمنة في التشغيل والنهوض بمستوى استعدادات الطوارئ.
- تطبيق ومتابعة نظام الإبلاغ عن الحوادث و المخاطر الكامنة والذي يسمح بتحليل الخسائر الكلية أو الجزئية مما يوفر السبيل لوضع الأشتراطات اللازمة لمنع تكرارها.
- الحد من التلوث من خلال تطبيق نظام إدارة السلامة والصحة المهنية وحماية البيئة مما يؤدي لمنع التأثيرات السلبية التي قد تنتج عنه.
- أتباع أفضل الوسائل التكنولوجية المتاحة والطرق الآمنة في نظام إدارة المخلفات.
- وضع الإطار العام لمراجعة أهداف وبرامج السلامة والصحة المهنية وحماية البيئة .
- التحسين المستمر في أداء أنظمة السلامة والصحة المهنية وحماية البيئة من خلال ترسيخ مبدأ أن السلامة مسئولية الجميع.
- تقوم جاسكو بالمراجعة الدورية لسياسة السلامة والصحة المهنية وحماية البيئة كما تقوم بإبلاغها لجميع العاملين وتتعهد بأن تكون متاحة للعامه.

رئيس مجلس الإدارة والعضو المنتدب


م. /حسن مهدي

مدير عام السلامة والصحة المهنية وحماية البيئة


ك. / مصطفى أبو المكارم



Egyptian Natural Gas Company (GASCO)

HSE POLICY

GASCO works in the field of natural gas transmission, distribution and processing, is aligning its business practices and principles by committing to excellence in the health, safety and environmental performance of our employees, customers, and communities through strict adherence to standards providing a safe workplace for our employees and preserve the environment of the community surrounding our facilities. In accordance with these goals, the **GASCO HSE Management will :-**

- **Meet the Applicable HSE Laws**, legislations, regulations, international codes and standards to which **GASCO** is subjected while performing our obligations and taking measures to demonstrate that the policies are being implemented in practice.
- **Identify HSE Hazards** arising from our activities evaluate & control risks in the implementation of necessary control measures in order to prevent and/or minimize accidents, incidents, injuries, and other risks and aspects to the lowest practical levels through using the best available technology, safe mode of operation and enhancing preparedness to contingencies.
- **Maintain an Incident Reporting System** that allows analysis of losses or potential losses and facilitates dissemination of the recommendations to prevent recurrence across the company.
- **Control Pollution**, bringing it to a minimum, through the application of the relevant HSE management system that leads to the prevention of negative impact .
- **Adopt** the safe modern technologies and successful experiences for our waste management system.
- **Establishing a Framework** for regular review of HSE objectives & targets.
- **Continual Improvement** of our performance-based occupational health, safety and environment management systems is the responsibility of everyone.
- **GASCO will Periodically Review** and communicate it to all employees, and make it available to the public.

HSE Gen. Manager


Chem. Mustafa A. El Makarem

Chairman and Managing Director


Eng. Hassan Mahdy



GASCO Profile

A Quick glance

A presence across the whole NG chain

The Egyptian Natural Gas Company (GASCO) was established in March 1997, since then the company started its mission in the field of natural gas transmission, distribution and processing

GASCO has always been a vital link between NG producers and consumers all over the country, every day GASCO serves a wide spectrum of customers (Power generation, Industrial cities, Domestic, CNG stations...) providing gas from the wellhead to burner's Tip via the National Gas Grid

Gasco plays also a leading role in gas processing and recovery of gas valuable components such as the LPG, Ethane/Propane mixture and commercial propane that is exported to International market

Gasco has maintained commitment to quality by qualifying its different activities to ISO standards, other national and international standards and codes: Gasco is accredited ISO 9001/2000 in the field of engineering and construction supervision of gas projects. Working in harmony with the environment, it was accredited ISO 14001:2004, it also obtained OHSAS 18001:1999 for occupational health and safety. It is also proud to get ISO 17025:1999 for chemical labs in the field of chemical analysis of natural gas.

SHAREHOLDERS

The Egyptian General Petroleum Corporation (EGPC) 70%

Petrojet 15%

Egypt Gas 15%

GASCO VISION

Taking the lead as a pioneer company in Egypt in the field of natural gas

GASCO Profile

GASCO Mission

- Management , Operation and maintenance of the National Gas Grid and its facilities.
- Enhancing the capacity of the national gas grid.
- Achieving satisfaction for local consumption and export
- Realizing optimum natural gas utilization through gas processing and the extraction of gas valuable components in accordance with the highest international standards.

BUSINESS PRINCIPLES

GASCO's business is run on the principles of commitment to safety, integrity, flexibility, quality, excellence and teamwork. Moreover, the heart of our business is technology.

Organization

GASCO is run by 22 general departments, the chairman and managing director is responsible for supervising of the general managers.

The board of directors is the main decision-making in the company, the board meets monthly to examine and approve matters relating to the company's strategy or for the planning of strategic goals of the company. Implementing the strategies and decisions decided by the board is the responsibility of general departments.

The company's operational structure is currently based around:

22 general departments

7 gas distribution centers

2 gas plants

This structure puts the best innovation to work in the National Gas Grid and gas processing, also provides a strong anchor for our business, the current structure ensures:

- Formed a homogenous framework

GASCO Profile

- Enhanced synergies between the company's activities
- Faster assessment of growth potential
- Operation, controlling & monitoring the National Gas Grid
- Maximizing gas utilization in the different sectors
- Developing & upgrading the NG infrastructures
- Extraction of gas valuable components
- Upgrading the HSE system
- Contribute to sustainable development
- Building a workforce capable of meeting the challenges

Activities

THE NATIONAL GAS GRID

Gas pipelines are lifelines:

GASCO achieves its main mission of supplying gas to all consumers through a grid of Different diameters pipelines with a total length 16800 km and maximum capacity of 160 MMSCM/D

The National Gas Grid provides a vital link in the energy chain between gas producers and consumers all over Egypt.

The National Gas Grid has currently extended to other neighboring countries through the Arab Gas Pipeline. we are keen to pave the way for Egyptian natural gas to go further in the Middle East and beyond.

Gas distribution centers:

Gas is pumped to customers in accordance with required pressure and standard specifications through gas distribution centers which are chosen in geographically areas to offer the best service and to communicate direct with the customers.

- Cairo Distribution Center
- Port said Distribution Center
- Shabsheer Distribution Center
- Alexandria Distribution Center
- Sinai & Canal Distribution Center
- Industrial Zones Distribution Center



GASCO Profile

- Aqaba Distribution Center

Security of gas supply:

To enhance security of safe and reliable delivery of NG to its customers, Gasco follows many procedures including pressure tests, pipelines inspection, and brush clearing program, corrosion protection, damage prevention, periodical routine maintenance, and installing a big number of valves as well as implementing a dynamic distributing policy.

The Arab Gas pipeline:

Driven by a vision of great potential and new possibilities, keen to apply our knowledge beyond our national boundaries, GASCO-believing that the Arab Gas Pipeline, the first phase of which was launched by President Mubarak and King Abdullah, is more than just a vessel carrying gas but a step towards creating consolidated economic links with Arab countries-takes pride in the role assigned to it by EGAS-led consortium the winning bidder for the construction of Arab Gas Pipeline, encompassing EGAS, GASCO, PETROJET and ENNPI. Highlights of Gasco role include:

First phase (36 " diameter and 267 km. length)

- Design and execution of Al-Arish off-take to supply gas to the Arab Gas pipeline.
- Design, installation and operation of filtering and metering station at the beginning of the pipeline at Al-Arish.
- Pre-commissioning and commissioning of Al-Arish- Taba / Aqaba pipeline, regulating the pressure to suit operational conditions.
- Preparation and commissioning of the control centers in Taba and Aqaba linking them to national gas control centre in Cairo.
- Collaboration in the execution and supervision of pre-commissioning of the filtering and metering station, control centre and pressure reducing station in Aqaba Power Station.
- Operation, management, maintenance and development of the pipeline and its facilities.
- Training of the Jordanian cadres on the gas activities.



GASCO Profile

GASCO carried out the assignment successfully and the pipeline was put on preparation August 2003

Second phase (36" diameter and 393 km. length)

From Aqaba port to the city of Rehab in Jordan on the Jordanian/Syrian borders–Gasco is assigned:

- Design review and HSE studies of this phase.
- Operation, management, maintenance and development of the pipeline for a term of 30 years linking it to the Egyptian national gas grid and the national control centre.
- Maximizing gas utilization in the different sectors in Jordan as a fuel for power stations domestic sector and CNG stations as well as a feedstock in the fertilizers, cement, petrochemical and steel industries.

The first operation of both Rehab and Samra Power Stations took place on February 2006

GAS TRANSMISSION & DISTRIBUTION

Gasco has an important role to play in promoting the utilization of gas in Egypt through its presence at every point of the Egyptian gas chain.

A core part of our distribution activities is urging and encouraging the use of NG serving different industries & sectors, believing that expansion of the use of NG will be extremely useful in the reduction of air pollution...

With an Egyptian Gas Grid 16450 km long, Gasco operates the largest & longest gas distribution grid in Africa and the Middle East.

Gasco implements a dynamic distributing policy to promoting more efficient uses of NG in terms of costs, energy efficiency and environmental protection, this policy is supervised by The Ministry of Petroleum.

The Egyptian Ministry of Petroleum has set and implementing a plan with a view of making gas available and affordable ensuring satisfaction of the local market requirements of NG as a fuel, a feedstock for many

GASCO Profile

industries and needs of liquefaction plants of gas (LNG) to be exported to Europe and USA, as well as gas export needs through pipelines.

Tasks of the gas transmission & distribution activity:

Operation, maintenance and development of the natural gas grid

Expansion and upgrading the natural gas grid and its facilities

Connect gas producers and consumers to the natural gas grid and provide Technical services.

DEVELOPING & UPGRADING GAS INFRASTRUCTURE

Upgrading gas infrastructure will accommodate for increase in gas supplies and consumers demand while helping in penetrating new gas markets locally and globally. So we focus on improving all aspects of the management of pipeline integrity to upgrade and maintain the National Gas Grid through the following:

EXPANSION PROJECTS TO ENHANCE THE CAPACITY OF THE GAS GRID

Gasco has always endeavored to enhance the capacity of the gas grid, upon Consultation and approval of both Egyptian Natural Gas Holding company (Egas) and The Ministry of Petroleum, to achieve this Gasco made significant investments in its projects.

Below are the projects undertaken to enhance the capability of the National Gas Grid by adding new pipelines and facilities:

El Tina-Abu Sultan pipeline (62 km/32"/16 mmscm/day)

- Dahsour / Koraimat pipeline (88 km/36"/37 mmscm/day)
- South Valle~ pipeline (285 km/32"/16 mmscm/day)
- Supply of NG to Sharm El Sheikh (208 km/20"/ 6 mmscm/day)
- Supply of NG to Hurghada ~ 127km / 24" / 7 mmscm/day)

El Tina-Abu Sultan pipeline (62 km/32" / 16mmscm/day)

GASCO Profile

The pipeline has been executed to support the eastern side flank of the national gas grid, to cater for gas quantities from Port Fouad & Northern Port Said fields and satisfy the demand of the local market in Suez and North Gulf of Suez. The date for operation of the pipeline is March 2007. The estimated total cost of the project is L.E 250 million.

Dahsour / Koraimat pipeline (88 km 36" / 37 mmscml/day)

The project aims to increase in the demand due to the expansion in Koraimat power station and to allow for expansion to the south. The operation date of the project is end of June 2007. Estimated total cost of the project is L.E 383 million.

South valley pipeline (791 km in length)

Within the framework of the government plan to develop the South of the country, feasibility studies have been conducted for the construction of a pipeline to feed gas to the South of Valley. It is divided into 3 phases:

- Phase 1 starts from Beni-suef to Abu-Qorqas city in Menia governorate (32" diameter and 150 km length) and operation starts in January 2008
- Phase 2 starts from Abu-Qorqas to Gerga (Assiut) (32" diameter and 259 km length) and it is planned to be finished in February 2009
- Phase 3 starts from Gerga to Aswan (30" diameter and 382 km/length) and it is planned to be finished in December 2009

Developing of gas facilities

On-Line Inspection

Easy, quick and effective tool of managing maintenance, the online inspection is one of the smart business choices adapted by Gasco to achieve efficient pipeline operations and improve planning by viewing multiple data sources in a graphical context to get accuracy in pipeline positioning and utilizing the proper repair procedure.

Geographical Information System (GIS)

GASCO Profile

GIS is sweeping the energy industry as the most efficient method of tracking, Monitoring, mapping and data basing an array of transmission facilities. This project applies GIS (Geographical Information System) to correlate the data obtained from the on-line inspection survey and the assessment procedure for each fault in the pipeline and its repair method. All stored in the GIS, the pipeline as-built maps are produced by combining inspection survey applying GPS (Geographical Positioning System) to locate the pipelines and the geographic digital maps of the pipeline routes as a basic layer in the information system.

Advantages of GIS include:

Accurate pipeline position

- Precise route maps
- Follow-up reports of pipelines and cost savings through building up realistic rehabilitation plans in addition to utilizing a proper repair procedure.

Upgrading the Reducing & Metering Stations

The project aims is securing proper performance of gas stations, increasing the capacity pf some stations while reviewing gas measurements to maintain accuracy, in addition to coating & revamping the valve rooms. The project includes coating the valve rooms against underground water, taking into consideration maintaining uniformly in shape and components while developing the valve rooms

Preparing the Sectionalizing valves to be connected to SCADA system

The project aims at monitoring and controlling pressure at the points of sectionalizing valves of the different Geographical areas of the company, sending data to the stoner system to be analyzed through connection with SCADA system. The system is enabled to shut down sectionalizing valves in emergency.

GAS PROCESSING

A turning point in our business



GASCO Profile

In response to the energy market change, Gasco has been very keen to play a key role in the gas processing in a bid to achieving self sufficiency of LPG and other gas valuable components and derivatives to be used either as feed stocks for the petrochemical industry or as an export option.

In 2000 Gasco entered the gas processing with the completion of its Western Desert Gas Complex. Amerya LPG Recovery Plant also came under Gasco supervision

In October 2001, Gasco entered into a global partnership with BP and Agip Int'l B.V in the United Gas Derivatives Company (UGDC) to develop a world-scale extraction plant on the Mediterranean coast near Port Said

Gasco handles gas processing activity through the following plants:

Western Desert Gas Complex:

It is a part of an integrated plan to develop and treat Western Desert gases.

The Complex treats up to 550 MMSCF/D of feed gases to extract:

460 MT/Y of Ethane/Propane mixture (C2C3) to be used in petrochemical industry
220 MT/Y of Commercial Propane to be exported
280 MT/Y of LPG for local market
465 MBBLs/Y of Condensate to be used in refineries

Gasco manage and operates the complex according to:

- Using the Integrated Plant Information System (IPIS)
- Designing and control of operations using DCS, PLC
- Environmental impact and pollution control is through:
 - Non-smoked flare gas
 - Natural gas air conditioning system
 - Maintaining flexible mode of operation

Amerya LPG Recovery Plant:

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It was designed to recover LPG and condensate. 330 MMSCF/D of feed gases are treated in the plant to produce 215 MT/Y of LPG for local market consumption and 230 MBBLS/Y of Condensate to be used in refineries.

Mediterranean Gas Complex:

Gasco is developing in partnership with Agip int'l B.V and British Petroleum BP a 408 million US \$ world-scale extraction plant located on the Mediterranean coast near port said with a capacity to handle 1100 MMSCFF/D of feed gases from East Mediterranean gas fields to extract Propane ,LPG and Condensate

The United Gas Derivatives Company (UGDC) has been established to operate and manage this complex.

Maximization of C2/C3 recovery

As a pioneer on the gas processing activity in Egypt, Gasco is continuing to expand its capacity through:

The integration between WDGC & Amerya LPG recovery plant

The project was executed to integrate WDGC & Amerya LPG plant in order to increase the productivity of Ethane / Propane mixture.

The project is applied by transferring rich gases of Ethane / Propane from Amerya LPG plant to WDGC through 12" inch pipeline for approximately 12 km. As a result, the production of propane increased by 290 ton/day and Ethane / Propane mixture increased by 1123 ton/day.

Maximizing Ethane/Propane Mixture

To increase the production of the Ethane / Propane mixture and Commercial Propane from the Western Desert Gas Complex and Amerya LPG Plant, Gasco has signed a contract with Enppi and Petrojet to

GASCO Profile

implement a project to maximize C2/C3 recovery in the WDGC and to install a new facility in Amerya LPG Plant to produce C2/C3.

The idea of maximizing C2/C3 mixture is due to the new gas discovers in the Western Desert, the growth in demand for propane and C2/C3 mixture by Petrochemical industries to meet future development in the uses of Ethylene and Polyethylene.

The cost of the project estimated to be \$ 200 million, the project is expected to be started up in the end of year 2009 and the expected production after the project completion is:

Ethan/Propane	872 000 Ton/year
Commercial Propane	320 000 Ton/year
LPG	630,000Ton/year
Condensate	103,000 Ton/year

NATA

National Advanced Transmission & Data Acquisition Center (NATA):

The strategy of The Egyptian Ministry of Petroleum is focused on energizing the future of the Egyptian gas business while improving the efficiency of the national gas grid infrastructure. This includes maximizing gas utilization in the different industrial and domestic sectors in addition to catering for exports to the global market.

The idea of NATA was conceived by The Ministry of Petroleum as a smart choice to put the best innovation to work in the National Gas Grid covering all gas production sites and delivery points, fulfilling our potential of turning each pipeline into a lifeline.

NATA is a group of integrated system providing perfect performance for safe gas supply encompassing:

- **Supervisory Control and Data Acquisition system (SCADA)**

GASCO Profile

- **Gas grid analysis system**
- **Gas grid upgrading, maintenance and development systems**
- **Gas network infrastructure expansion projects**

(SCADA)

Supervisory Control and Data Acquisition system

A tool to match our performance, the SCADA system is a highly sophisticated integrated system bringing the fields to the field of vision while masterminding co-ordination and control of gas transmission & distribution, analysis for failure or leakage via an advanced bundle of software applications making remote processes visible to everyone from control room operators to contingency management team, and decision support systems.

The SCADA system comprises the following:

1. The remote terminal units (RTUs)

Providing direct and timely information, the remote terminal units (RTUs) are responsible for collecting data from the different control sites of the company. Control commands to different devices, such as valves with actuators, can be issued via RTUs.

2. Control Centers

The control centers work 24 hrs a day, 7 days a week, based on sophisticated emergency scenarios.

3. Grid Control Center (GCC)

The grid control center (GCC) is designed on a basis of full redundancy and is connected to the local control centers (LCC) at the different areas of the company.

The GCC takes over the role of any LCC in case of failure.

Local Control Centers (LCC)

GASCO Profile

There are four local control centers in Cairo, Alex, Suez and Shabshir.

4. Emergency Control Center

The system is designed to allow one of the local control centers (Shabshir) to work as emergency control centre in case of failure to the Grid Control Centre (GCC).

5. Telecommunication network

The system is supported by a robust telecommunication network comprising primary digital microwave network, secondary digital microwave network, fiber optics network, and digital land mobile trucking network.

Primary telecommunication network

A digital microwave network working in the 7 Giga Hz frequency band and is used to connect the main control center to the local control centers.

6. Secondary telecommunication network

Real-time data of control sites is transmitted to the local control centers using 4 secondary digital microwave networks within a frequency of 2.4 Giga Hz.

These networks provide also voice communication between all sites.

Fiber optics network

Fiber optics system is installed with most recent pipelines to provide telecommunications services over that pipeline such as Amreya / Dahshour and Quantara / Eionn Moussa

7. Software applications

A number of software applications are applied in the system controlling:

- SCADA software package

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- Network management system for different telecommunications systems.
- Gas Grid simulation software which is state of the art s/w package capable of predicting future failure while providing quantitative and qualitative analysis of the National Gas Grid and its facilities specially the valves maintaining utmost control over the grid. This helps in handling contingencies while maintaining optimum mode of operation.

Network analysis

GASCO achieves its main mission of supplying gas to all consumers through a grid of different diameter pipeline.

GASCO started on 1997 with a national grid of length 2800 Km and capacity 3 million m³ /day and with expansion projects and creating new pipelines, the national grid reaches 16800 km in length and capacity 160 million m³/day

A database of information about all the pipelines in the grid is used as the input to the program. The usual approach is to make estimates and closely follow trends in load growth, updating the network at regular intervals to effectively determine the flows and pressures 'in all pipelines and pipes junctions.

Network analysis, a flexible visualizing tool using the most state-of the art computer software, has the following applications in the national gas grid:

Analyzing existing loads of the grid and the peak load expected while determining the rate of growth and the positioning of different rate of growth accurately within the network putting the big picture before the eyes of NATA operators.

- Testing the network under specific conditions such as the effect of adding a new load. This will determine whether the existing system is capable of taking the new load and, if not, the extent of additional work required to accommodate it.



GASCO Profile

- Identification of reinforcement schemes to determine the minimum pressure areas within an existing network and hence the requirement for reinforcement of these areas. The load data and load growth rates are accurate and that there are no interruptible loads on system.
- Pressure optimization to minimize the requirement for compression in high pressure pipelines.

Operational planning:

Occasional load monitoring exercise to assess the accuracy of assumptions made in determining the load data. This is achieved by measuring flows in pipes supplying known number of customers. It is also possible to simulate the effect of plant failure mains breakage or maintenance shut-downs under varying conditions and prepare contingency plans accordingly

Designing new networks: network analysis is instrumental and indispensable in this regard specially in the preparation of short and Long term plans for the grid expansion depending on gas supply and demand forecast and is carried out in conjunction with financial appraisal allowing the optimal & economical solution to be found

Gas network expansion projects

Critical to the success of NATA is using the state of the art software in the field of stress analysis, pipeline design according to international standards determining the best routes, diameters, thickness and length of pipelines while considering safety considerations and hazards after conducting geotechnical survey for the pipelines

HSE

Always the first & has the last word

Gasco realize that a well-run safety, health and environment programs is an integral part of a well-run organization.

GASCO Profile

At Gasco, everything we do guided by our core values of safety, environmental stewardship, valuing all people and business ethics. These core values are woven into our business principles, as they are fundamental to sustainability and to our vision of being recognized in the region as one of the leading companies in our field.

Our HSE policy is to manage our activities in a manner that not only avoids damage or harm to individuals (employees, customers, suppliers...), environmental or assets, but also adds sustainable value to our business & to company's reputation. This challenge stimulates us to adopt innovative ways to limit the environmental impact of our activities at local and regional levels. We have made considerable progress towards this policy.

Gasco maintains HSE as a top priority and provides support on HSE matters as they relate to our business activities.

Helping to define, establish and incorporate HSE responsibility and accountability through every level creates value for our communities and employees alike.

GASCO HSE Policy provides the framework for the implementation of all HSE activities.

From the way of OHSAS 18001 and ISO 14001 Gasco achieve its policy:

- Raise level of awareness, training and knowledge of company employee

- Implement the applicable HSE standards, legal and other requirements.

- Hazard Identification and assessment the risk

- Assessment of the environmental impacts

- Implement the necessary control measures to ensure that the risks are reduced as law as reasonably practicable.

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Assure that the customers and contractors consider Gasco HSE requirements in their activities

A plan to safeguard company's assets

Given the strategic importance of company's business and the valuable assets the company possesses or is operating, a strict security plan was set. Backed by modern technology, the scope of the plan covers securing company sites and locations, network facilities, utilities, headquarters and premises against robbery, physical and moral destruction and intrusion.

Sustainable development

A strategic priority for Gasco

Contribute actively to the national development programs is one of our priorities and one of the most important business principles of Gasco through find a delicate balance between our activities & environmental protection from side, create value for our shareholders & social responsibility from another side.

Sustainable Development goals:

To encourage business partnerships to do their effort for sustainable development.

To support values such as community commitment and environmental protection.

To provide support on HSE matters, helping to define, establish and incorporate.

HSE responsibility

Our involvement with local communities encompasses a variety of activities:

Build community relationships.

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Manage interactions with local communities.

Make voluntary and contributions to social projects.

Sponsor social, environmental, cultural and sports events.

Focus on people

Reliable Resources with Relentless Resolution

The strength of our company lies in the quality of our people and with the progress we have made in leadership development, our simple, sustainable and successful HR strategy depends on attracting, retaining and training the best people who represent a rich variety" 01 ideas, talents and experiences while creating a unified company with shared values and a common vision where every member of GASCO staff has a clear sense of his contribution to GASCO and a real desire to take personal responsibility to deliver outstanding results.

We have put in place a range of cohesive HR policies and programs, designed to link and align action with strategy ensuring that all the staff understand the long-term strategy of the company while engaging our people with the aims of the business, the needs of our customers and the interests of shareholders. We help our staff to explore their potentials and provide opportunities for them to learn grow and develop competencies. Gasco motivated staff are always ready to deliver quality services and products bringing ideas into reality shaping the company we have today, making it up to the challenge.

ISO & OHSAS Certifications

ISO 14001

OHSAS 18001

Previous EIA Studies

GASCO Profile

- **E.I.A Study for Abu Qurqas - Asuit onshore gas Pipeline Project**
- **E.I.A Study for Shukier - Hurghda 24" Pipeline 115 Km.**
- **E.I.A Study for maximization arabic**
- **E.I.A Study for maximization english**
- **E.I.A Study for Port Foad - El Tina Pipeline**
- **E.I.A Study for Abu Sultan El Sokhna**
- **E.I.A Study for Abr Sinai**
- **E.I.A Study for Abo homos - Elnubariah**
- **E.I.A Gerga - Aswan Onshore Gas Pipeline Project (new) >> Arabic - English <<**
- **E.I.A Assiut - Gerga (new)**





HSE MANAGEMENT SYSTEM
نظام إدارة السلامة والصحة المهنية والبيئة

GASCO-HSE-P-008

Emergency Preparedness & Response Procedure
إجراء الإستعداد والاستجابة للطوارئ

The Egyptian Natural Gas Company الشركة المصرية للغازات الطبيعية

GASCO

جاسكو

Emergency Preparedness And Response Procedure

إجراء الإستعداد والاستجابة للطوارئ

Issue #	Item #	Date	Preparation by	Reviewed by	Approved by GASCO HSE General Manager
1	All	01/05/2006	Ahmed Roustom/Basma Eldeeb		
2	All	15/11/2008	GASCO HSE Staff		

GASCO	HSE MANAGEMENT SYSTEM نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-P-008
Emergency Preparedness & Response Procedure إجراء الإستعداد والإستجابة للطوارئ		

1- Purpose:

To identify the potential occurrence of accidents and emergency situations and how to respond for each and to identify preventing and mitigating actions needed for dealing the risks and impacts that may be associated with them.

2- Scope:

This procedure covers all emergency situations at all GASCO's sites premises

3- Definitions:

HSE: Occupational health, safety and environment.

ECC: Emergency control center

4- Used forms :

4-1 Emergency Response Practices Evaluation (GASCO-HSE-F-037)

5- Responsibility:

1- In cooperation with each site, HSE G. Dept. is responsible for prepare the emergency response plan:

- a) To identify the potential for emergency situations;
- b) To respond to such emergency situations.

2- Each site is responsible for preparedness to emergency situations in cooperation with HSE G. Department.

3- Each site HSE crew and other concerned department are responsible for response and manage the emergency cases under ECC supervision in cooperation with the Main ECC in Head Quarter (as in ERP).

4- HSE Site Dept. arrange for emergency training programs and follow-up the repardeness for emergency / accidental situations.

1- الغرض:

يهدف هذا الإجراء إلى تحديد والحوادث المحتملة وقوعها بالشركة وكيفية التعامل معها وتحديد الاجراءات الوقائية والتصحيحية التي يتم اتخاذها للتعامل مع المخاطر المؤثرة على السلامة والصحة المهنية والتأثيرات البيئية المرتبطة بهذه الحوادث

2- مجال التطبيق:

يشمل هذا الاجراء جميع حالات الطوارئ المحتملة في جميع مواقع شركة جاسكو

3- تعريفات:

HSE: السلامة والصحة المهنية وحماية البيئة
ECC : غرفة التحكم في حالات الطوارئ

4- النماذج المستخدمة:

1-4 تقييم إستعدادات حالات الطوارئ نموذج رقم 37 .

5- المسؤوليات:

1- الادارة العامة للسلامة والصحة المهنية وحماية البيئة مسؤولة عن إعداد خطة الإستعداد لحالات الطوارئ بالتعاون مع كل موقع من مواقع الشركة و ذلك:

(أ) لتحديد حالات الطوارئ المحتملة ؛
(ب) تحديد سيناريوهات الاستجابة لمثل هذه الحالات الطارئة.

2- كل منطقة مسؤولة عن تجهيز الإستعدادات لحالات الطوارئ بالتعاون مع الإدارة العامة للسلامة والصحة المهنية وحماية البيئة .

3- يتولى طاقم السلامة والصحة المهنية وحماية البيئة فى كل موقع بالتعاون مع الإدارات المعنية تحت إشراف غرفة الطوارئ بالمنطقة مسئولية إستعداد وإدارة حالات الطوارئ بالتعاون مع غرفة الطوارئ الرئيسية (طبقاً لما ورد فى خطة الطوارئ).

4- يقوم قطاع السلامة والبيئة بكل موقع بتنظيم برامج تدريبية خاصة بالاستعداد لحالات الطوارئ ويقوم بمتابعة إستعدادات مواجهة الحوادث وحالات الطوارئ .

ISSUE NO:	2	PAGE	OF
ISSUE DATE:	15/11/2008		6

GASCO	HSE MANAGEMENT SYSTEM نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-P-008
Emergency Preparedness & Response Procedure إجراء الإستعداد والإستجابة للطوارئ		

5- Site HSE Committee review the results of preparedness for emergency / accidental situations follow-up. & the learned lessons of any actual emergency case or mock drill and sent copy of this meeting to HSE general manager.

6- After any emergency case the emergency evaluation committee evaluate the emergency case under site G.Mgr. supervision on the emergency response practices evaluation form (GASCO-HSE-F-037).

7- After any fire drill emergency center team evaluate the drill on the emergency response practices evaluation form (GASCO- HSE- F037)

8- The responsibility of the emergency case observer, radio room operator, emergency team, network G. Mgr., operation & areas affairs G. Mgr., NATA G. Mgr., networks maintenance & upgrading G. Mgr., facilities G. Mgr., natural gas transportation and distribution G. Mgr., administration affairs G. Mgr., support service G. Mgr., HSE G. Mgr., communication G. Mgr., legal affairs G. Mgr., publication team, medical affairs G. Mgr., security G. Mgr., site / area / plant managers, departments and sector managers and HSE sector managers are described in details in general emergency response plan and each site emergency response plan.

5- تتولى لجنة السلامة والصحة المهنية وحماية البيئة بكل موقع مسئولية مراجعة نتائج متابعة إستعدادات مواجهة الحوادث وحالات الطوارئ والدروس المستفادة من حالات الطوارئ الوهمية أو الفعلية وترسل نسخة من مضبطة هذا الإجتماع لمدير عام السلامة والصحة المهنية وحماية البيئة.

6- تجتمع لجنة تقييم حالات الطوارئ تحت اشراف مديرالموقع عقب حدوث أى حالة طوارئ وتقوم بتقييم حالة الطوارئ التي حدثت ويتم تسجيل النتائج على نموذج تقييم إستعدادات حالات الطوارئ (نموذج رقم 37)

7- يقوم فريق غرفة الطوارئ بكل موقع بتقييم التجارب الوهمية عقب أى تجربة يتم إجراؤها وتسجل النتائج على نموذج تقييم إستعدادات حالات الطوارئ (نموذج رقم 37)

8- مسئوليات مكتشف حالة الطوارئ ومشغل الراديو وفريق الطوارئ ومدير عام الإدارة العامة للشبكات ومدير عام التشغيل وشئون المناطق ومدير التحكم المركزي ومدير عام الإدارة العامة لنقل وتوزيع الغاز ومدير الإدارة العامة لصيانة وتطوير الشبكات ومدير عام الإدارة العامة للتسهيلات ومدير الإدارة العامة للشئون الإدارية ومدير عام الإدارة العامة للخدمات المساعدة ومدير عام السلامة والصحة المهنية وحماية البيئة ومدير عام الاتصالات ومدير عام الشئون القانونية وفريق الأعلام ومدير عام الشئون الطبية ومدير عام الأمن الإداري ومدير المنطقة / المصنع / الموقع ومديرو القطاعات و الأقسام المختلفة بالمناطق / المصانع ومديرو السلامة والبيئة بالمناطق / المصانع محددة بالتفصيل في خطة الطوارئ العامة وخطط الطوارئ بالمناطق والمصانع.

ISSUE NO:	2	PAGE	OF
ISSUE DATE:	15/11/2008		6

GASCO	HSE MANAGEMENT SYSTEM نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-P-008
Emergency Preparedness & Response Procedure إجراء الاستعداد والاستجابة للطوارئ		

6- General:

GASCO respond to actual emergencies and prevent or mitigate associated adverse HSE consequences. In planning its emergency response the GASCO take account of the needs of relevant interested parties, e.g. emergency services and neighbors.

GASCO also periodically test its ERP's (mock drills), where practicable, involving relevant interested parties as appropriate.

GASCO periodically review and, where necessary, revise its emergency preparedness and response plans, in particular, after periodical testing and after the occurrence of emergencies as mentioned in Emergency Response Practices Evaluation form # 37

HSE G. Dept. in coordination with site manager & site HSE department are responsible for review the preparedness to emergencies in all sites .

Each GASCO' site cooperate with HSE G. Dept. for regarding of emergencies.

7- Procedure:

7-1 HSE General Department prepares a **contingency plan** for all GASCO's sites. Such plan is approved by the HSE G.M. & includes the following subjects:

- Overview of emergency management.
- Emergencies classes brief description.
- Key personnel responsibilities.
- Typical site emergency procedure.
- Emergency communication plan .

A copy of these plans is placed in each site emergency control center and in Head Quarter Main ECC.

6- عام:

تعمل جاسكو على الاستجابة لحالات الطوارئ الفعلية ومنع أو تخفيف الآثار السلبية المترتبة عليها والتي قد تؤثر على السلامة والصحة المهنية والبيئة . تأخذ جاسكو في الاعتبار عند وضع خطة الإستجابة في حالات الطوارئ احتياجات الأطراف المعنية ذات الصلة بمواقع الشركة ، على سبيل المثال خدمات الطوارئ الحكومية كالإسعاف و الدفاع المدني وأيضاً الجيران .

تقوم جاسكو بإجراء اختبار دوري للاستجابة لحالات الطوارئ (تجارب وهمية) وحينما يكون ممكناً تشارك فيها الأطراف المعنية ذات الصلة بمواقع الشركة حسبما يقتضي الأمر.

تقوم جاسكو دورياً بمراجعة وتنقيح خطط الطوارئ -عندما تقتضي الضرورة - خاصة بعد التجارب الوهمية الدورية وبعد حالات الطوارئ الفعلية طبقاً وما يسفر عنه نموذج تقييم إستعدادات حالات الطوارئ رقم 37.

تتولى الإدارة العامة للسلامة والصحة المهنية وحماية البيئة بالتنسيق مع مدير الموقع وقطاع السلامة والبيئة مسؤولية مراجعة إستعدادات وتجهيزات في جميع مناطق ومواقع الشركة لمواجهة الطوارئ. كل موقع من مواقع الشركة يتعاون مع الإدارة العامة للسلامة والصحة المهنية وحماية البيئة فيما يتعلق بحالات الطوارئ.

7- الاجراء:

7-1 تقوم الادارة العامة للسلامة والصحة المهنية وحماية البيئة بإعداد خطة طوارئ لجميع مواقع الشركة ، ويعتمد مدير عام السلامة والصحة المهنية والبيئة هذه الخطة وتتضمن الخطة الجوانب الآتية:

- مقدمة وعرض لادارة حالات الطوارئ.
 - وصف مختصر لأنواع الطوارئ المختلفة.
 - مسؤوليات المديرين والرؤساء.
 - إجراء التعامل مع حالات الطوارئ بالموقع.
 - خطة الإتصالات أثناء حالات الطوارئ
- توجد نسخة من خطة الطوارئ لدى غرفة الطوارئ في كل موقع بالإضافة الى نسخة موجودة في غرفة الطوارئ الرئيسية بالمركز الرئيسي.

ISSUE NO:	2	PAGE	OF
ISSUE DATE:	15/11/2008		6

GASCO	HSE MANAGEMENT SYSTEM نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-P-008
Emergency Preparedness & Response Procedure إجراء الاستعداد والاستجابة للطوارئ		

7-2 HSE General Manager coordinate with All GASCO's Sites to review and updated a plan once at least in the year or as per need and All GASCO's Sites are provided with sufficient and suitable facilities and capabilities needed for emergency situations. These facilities may be some or all of the following:

- Fire fighting equipments
- Fire fighting systems & automatic safety control systems
- Personal protective equipments
- A clinic center or first aid materials.

7-3 Such facilities are checked periodically by HSE site department for adequacy and validity.

7-4 Arrangements with neighbor community working field sites are agreed and considered, under the umbrella of GASCO and EGAS, to integrate emergency preparedness facilities and capabilities to overcome any actual happening accidents.

7-5 Experimental drills, takes place periodically according to contingency plan requirements. A report of each drill results is made by HSE dept. and introduced for **debate** in the nearest HSE Meeting.

7-6 Training programs are planed and performed for the purpose of raising staff awareness of emergency subjects, right behavior to avoid accidents and correct the response to emergency cases. These training programs are managed according to HSE_MS training procedure.

7-2 تتولى الإدارة العامة للسلامة والصحة المهنية وحماية البيئة بالتنسيق مع المناطق / المصانع مراجعة وتحديث الخطة مرة سنويا او كلما دعت الحاجة لذلك , على جميع مواقع شركة جاسكو مجهزة بالتسهيلات والاستعدادات والامكانيات الكافية والمناسبة لحالات الطوارئ وهذه الاستعدادات على سبيل المثال :

- معدات مكافحة الحريق.
- أنظمة مكافحة الحريق وأنظمة السلامة ذات التحكم الأتوماتيكي.
- مهمات الوقاية الشخصية.
- عيادة طبية بها كافة الإسعافات الاولية.

7-3 تقوم إدارة السلامة والصحة المهنية وحماية البيئة بالمنطقة بمراجعة دورية على كافة التسهيلات والاستعدادات المتوفرة والتأكد من أنها مناسبة.

7-4 تقوم شركة جاسكو بالتنسيق مع الشركات الأخرى التى لها مواقع عمل مجاورة للشركة وهذا التنسيق يتم تحت إشراف ويعلم كل من شركة جاسكو والشركة القابضة وذلك بهدف تكامل جميع الإمكانيات والتسهيلات والاستعدادات لمواجهة الحوادث .

7-5 يتم اجراء التجارب الوهمية بشكل دورى فى الشركة طبقاً لمتطلبات خطة الطوارئ ، ويتم اعداد تقرير خاص بكل تجربة ونتائجها ويقوم قطاع السلامة والصحة المهنية وحماية البيئة بعمل التقرير وتقديمه **للمناقشة** فى أقرب إجتماع لإدارة السلامة والصحة المهنية وحماية البيئة.

7-6 يتم عمل برامج تدريبية وتنفيذها بغرض رفع مستوى الوعى للعاملين بحالات الطوارئ والتصرف بطريقة صحيحة لتجنب وقوع حوادث وأيضاً كيفية التصرف فى حالة وقوع حوادث، يتم اعداد وادارة هذه البرامج طبقاً لاجراء التدريب الخاص بنظام ادارة السلامة والصحة المهنية والبيئة.

ISSUE NO:	2	PAGE	OF
ISSUE DATE:	15/11/2008		6

GASCO	HSE MANAGEMENT SYSTEM نظام إدارة السلامة والصحة المهنية والبيئة	GASCO-HSE-P-008
Emergency Preparedness & Response Procedure إجراء الإستعداد والإستجابة للطوارئ		

7-7 Results of any actual accidental situations are reported by HSE dept. and discussed in the nearest HSE general department meeting. relative documents and procedures should be revised after actual accidental situations to insure its adequacy.

8- Records needed:

Drills reports and emergency cases report (emergency response practices evaluation sheets) are maintained at HSE site department.

7-7 تقوم ادارة السلامة والصحة المهنية وحماية البيئة بابلاغ نتائج الحوادث ويتم مناقشة هذه النتائج فى اقرب اجتماع للادارة العامة للسلامة والصحة المهنية وحماية البيئة، تتم ايضا مراجعة جميع اجراءات العمل والوثائق المستخدمة بعد وقوع اى حادثة للتأكد من أنها مناسبة.

8- السجلات:

تقارير تقييم التجارب الوهمية والحوادث يتم الإحتفاظ بها فى قطاع السلامة والصحة المهنية وحماية البيئة بالمنطقة.

ISSUE NO:	2	PAGE	OF
ISSUE DATE:	15/11/2008		6



Emergency Response Practices Evaluation

TEAM LEADERS COMMENTS AND OBSERVATION	EMERGENCY PLAN COMMITTEE DECISIONS
☆ Emergency Command Center Members:
☆ Emergency Operations Coordinator:
☆ HSE Manager:
☆ Materials And Transportation Manager:
☆ Engineering Services:
☆ Medical Services :

EMERGENCY PLAN COMMITTEE

Operations

HSE

Materials/Trans

Engineering

Medical

APPROVED: _____

Site General Manager

ISSUE NO:	1	PAGE	OF
ISSUE DATE:	01/05/2006	2	2

تقييم حالة الطوارئ

قرارات لجنة خطة الطوارئ	تعليقات والملاحظات لقائد الفريق
.....	☆ رئيس اعضاء غرفة الطوارئ :
.....	☆ ممثلى التشغيل فى الطوارئ :
.....	☆ مدير ادارة السلامة والصحة المهنية وحماية البيئة :
.....	☆ مديرى ادارتى التشغيل والنقل :
.....	☆ الخدمات الهندسية :
.....	☆ الخدمات الطبية :
<p>لجنة خطة الطوارئ</p> <p>التشغيل السلامة والصحة المهنية وحماية المهمات / النقل الهندسية الطبية</p> <p>موافقة : _____ مدير عام المنطقة</p>	

رقم الإصدار	0	صفحة	1	من	2
تاريخ الإصدار	2006/05/01				

El Nubaria El Sadat Gas Pipeline

Environmental Impact Assessment



TABLE OF CONTENTS

CONTENTS		Page
0.0 EXECUTIVE SUMMARY		
1.0 INTRODUCTION		
1.1 Natural Gas Option in Egypt		1
1.2 About The project		2
1.2.1 Quantities of Gas Distributed Through the National Gas Grid		3
1.2.2 Supplying gas to the local market		4
1.3 about Environmental Impact Assessment		3
1.3.1 Environmental Considerations of Natural Gas		3
1.3.2 Objectives.		3
1.3.3 WORK		3
2.0 ENVIRONMENTAL LEGISLATION		
2.1 Introduction		6
2.2 Administrative Responsibilities of Egyptian Agencies		6
2.2.1 Egyptian Environmental Affairs Agency (EEAA)		7
2.2.2 Egyptian Natural Gas Holding Company (EGAS)		7
2.2.3 Governorates		8
2.3 Law No. 4 of 1994 and its Executive Regulations		9
2.3.1 Law No. 4 of 1994		9
2.3.2 Prime Minister's Decree No. 338 of the year 1995		11
2.3.3 Standards of Anticipated Impacts as specified in ER		15
2.3.3.1 Atmospheric Emissions and Air Quality		15
2.3.3.2 Noise Levels		19
2.3.3.3 Waste management		20
2.3.3.4 Water Pollution		21
2.4 EEAA/ EGPC Guidelines for EIA		21
2.5 The Appeal System		22

TABLE OF CONTENTS

2.6. Permits Required For the Construction and Operation of the Pipelines	23
2.7. GASCO HSE Management System Profile	23
2.8. GASCO HSE EXPECTATIONS	24

3.0 PROJECT DESCRIPTION

3.1 Introduction	26
3.2. BASIS OF DESIGN	26
3.2.1 DESIGN GAS COMPOSITION AND FLOW RATE	
3.3. route description	27
3.4. TIME SCHEDULE	28
3.5. <i>Types & number of equipments used during the construction phase:</i>	29
3.6. Pipeline Surveillance - Patrolling and Leakage	30
3.6.1 Pipeline Patrolling	30
3.6.2 Leakage Survey	30
3.6.3 Frequency of Patrol	31
3.6.4 valve rooms	32
3.7. Construction	32
3.7.1 <i>Pipe, installations, storage & stringing</i>	33
3.7.2 <i>Foundations structural work or civil work</i>	33
3.7.3 <i>Trenching lowering and laying</i>	34
3.7.4 <i>Backfilling</i>	34
3.7.5 <i>Welding and Weld Inspection</i>	34
3.7.6 <i>Tie in including valves</i>	35
3.7.7 <i>Pneumatic test</i>	36
3.7.8 <i>Cleaning of pipes</i>	36
3.7.9 DISPOSAL OF CHEMICALS	37
3.7.10 WATER BODIES CROSSING METHODOLOGY	37
3.7.11 HYDROSTATIC TESTING	41
3.7.12 DEWATERING	42
3.7.13 magnetic cleaning and geometrical pigging	42
3.7.14 drying and commissions	43
3.7.15 records and operations manual	43
3.7.16 for corrosion control	43

TABLE OF CONTENTS

4.0 EXISTING ENVIRONMENT

4.1 Seismicity	44
4.2. the ground water system in the study area	48
4.3 ECOLOGICAL HABITAT	49
4.4. -FLORA	50
4.5. FAUNA	51
4.6 ARCHEOLOGY	52
4.7 AIR TEMPERATURE	52
4.8. rain and relative humidity	53
4.9. wind	54
4.10. SOCIO-ECONOMIC	56

5.0 ALTERNATIVES

5.1 Horizontal Directional Drilling (HDD)	59
5.2 The "no action" Alternative	60

6.0 ENVIRONMENTAL IMPACTS

6.1 Introduction	62
6.2 assessment of risk and impact significance	63
6.3 Air Emission	66
6.4 Dust	69
6.5 Noise	70
6.6. HEAT STRESS	78
6.7 soil	83
6.8 GROUNDWATER SOURCES	85
6.9 surface water	86
6.10 ECOLOGICAL IMPACTS	86
6.11 LANDSCAPE AND VISUAL IMPACTS	87
6.12 ARCHAEOLOGY AND CULTURAL HERITAGE	87
6.13 EROSION CONTROL & SITE RESTORATION	88



TABLE OF CONTENTS

6.14 Socio Economic IMPACTS	88
6.15 project benefits	89
6.16 land use effects	90
6.17 chemicals	91
6.18 waste	97
6.19 traffic	101

7.0 Environmental Mitigation & Management

7.1 Environmental Mitigation	103
7.1.1 Air Emissions	103
7.1.2 Dust	104
7.1.3 Noise	104
7.1.4 Soils	105
7.1.5 Groundwater Sources	105
7.1.6 Surface Water	106
7.1.7 Landscape And Visual Impacts	106
7.1.8 Archaeology And Cultural Heritage	106
7.1.9 Erosion Control & Site Restoration	107
7.1.10 1 Socio-Economic Impacts	107
7.1.10.2 Waste	107
7.2 Environmental Management	108
7.2.1 Introduction	108
7.2.2 GASCO Environmental Management System	109
7.2.2.1 EMP During construction	110
7.2.3 PROJECT OVERVIEW	111
7.2.4 Scope of the Construction Environmental Control Plan (CECP)	112
7.2.5 Environmental Responsibilities	112
7.2.6 Emergency Response Actions	117
7.2.7 Environmental Construction Controls	117
7.2.7.1 Processing Plant	117
7.2.7.2 Project Environmental Plans	118
7.2.8 Emergency Response and Spill Prevention Plan	118
7.2.8.1 Spill Prevention	118
7.2.8.2 Spill Response	119
7.2.8.3 Contaminated Land Plan	120



TABLE OF CONTENTS

7.2.8.4 Waste Management Plan	121
7.3 Erosion and Sedimentation Control Plan	123
7.4 Suppression of Dust and Dirt Plan I Air Quality Plan	123
7.4.1 Mitigation Measures to Control Dust	123
7.4.2 General Air Quality Plan	125
7.5. Noise and Vibration Plan	125
7.5.1 Noise and Vibration Sources	125
7.5.2 Noise and Vibration Mitigation Measures	126
7.6. Traffic Management Plan	127

8.0 CONCLUSION & RECOMMENDATIONS

9.0 PUBLIC CONSULTATION PROCESS

Attachments

- [1] new HSE manual
- [2] Pictures
- [3] List of Crossings
- [4] new policy 2009
- [5] nubaria el sadat cost
- [6] emergency procedure