Revision 3 27/10/2020 Ashkelon

Technical Specification Tank cleaning

General

EAPC ltd is interested to clean the remaining of crude oil from its Above Storage Tank (AST), either for performing internal inspections and repair, or to change the liquid stored from crude oil to distillates.
The AST's are built with external floating roof with no external dome or closure, diameters of 80, 60 and 50 meters.
In case of change of liquid from crude oil to distillates, the cleaning will be extended to inner shell of tank
Tank farm location – ASHKELON AND EILAT

Scope of work:

- Supply of all equipment and materials needed for sludge dissolve and removal to the main pipeline of the cleaned tank, supply of crude oil for dissolve will be in EAPC's charge
- Transferring the accumulated sludge by dissolving it in fresh crude oil or distillates from crude, and pumping it in other tanks belonging to EAPC. **As long as the product is fluid enough to be pumped, sand or other insoluble material separation is not a requirement. Water separation is not required**.
- Zero Toxic and Flammable Emission during all stages of process (None or minimal emissions defined as non-detectable outside plant fence)
- Mechanical work necessary for nozzle installation including supply and installation of pipes necessary to deliver high pressure solvent to the sludge deposit and feed the pumps, connection of all modules including the output connection to other EAPC pipelines.
- Connection to other tank for fresh crude with a temporary pipeline on EAPC ground for fresh crude supply, connected to 6" or 4" raiser on the main line of an adjacent tank.
- Thorough rinse with water and/or water detergent, detergent that has to be bio degradable, non-toxic to our bacterial hydrocarbon purifying system. The resulted "dirty" water will be collected in EAPC tanks for further treatment – water treatment not on scope. Approval of detergent to be received before purchasing and deploying on site. EAPC will approve only detergents that will not damage the facilities "dirty water treatment". Lacking a suitable detergent the contractor will have to rinse with water only.
- Moving and positioning the equipment inside and around the secondary containment dike of the cleaned tank, operating and servicing all the necessary equipment for the success of the procedure.
- All filtration process needed to exchange the air in the tank to a respirable air before allowing access for workers; included the supply of active carbon needed, exhausters, vents, flame arrestors.
- Supply of pumps, pipes, nozzles, reducers or adaptors to an ASA 150 outlet for fluid sludge and an ASA 150 inlet for fresh crude as defined by contractor.

- Opening the manholes for entering the tank, when conditions inside the tank are allowing it without danger to the operators, and wipe dry the tank and to bring it to a clean and gas free environment.
- Supply of any other needed solvents (if required) that are not crude oil and can be disposed inside the crude oil (ex: diesel fuel).
- Safety requirements during the process of cleaning according to the safety plan that has to be prepared by the contractor; Safety plan has to include:
    - All certification and training required for the operators to operate the equipment,
    - All equipment certifications (including safe to use areas), specific safety requirements for non-standard equipment (for example safe pressure / temperature levels)
    - Personal protective equipment planned to be in use for operators – in diverse work areas.
    - Planned interface with the plant, person in charge, training, work permit on plant premises, working hours, coordinating with EAPC's Operations
    - Emergency procedures – accident, fire, oil spill, accident involving operators.
- The cleaning should include the following parts:
    - **Floor with all its equipment, including the anti-vortex stage over the main pipe, the main pipe connection to the floor up to and including the flange connection for the main valve, all other non-removable parts linked to the floor.**
    - **Shell from the connection with annular ring at least one meter high, up to the roof, including any other appurtenances connected to the shell under the level of the floating roof in maintenance mode (about 2 m).**
    - **Floating roof, including seal and foam dam (upper part of floating roof), ceiling (lower part of floating roof, in contact with crude), ceiling beams, the ceiling and its internal equipment from all sides, the lateral part of the floating roof (pontoon side) that faces the shell, floating roof seal with all components, floating roof supports (legs), floating roof water drain and drain pipes and flexible hose**,
- All the dirt on the external side of the roof should be removed, including crude oil puddles, dry crude oil, dust or free rust or any other muck that doesn't allow protective paint check. Including foam dam and the space between the foam dam and the extremity of the roof.
- **At the end of the cleaning there should be no remnants of combustible or oily material or any other muck covering all the parts mentioned above**.
- The tank will be delivered completely dry, clean of any remnants of oil or fat materials, without any flammable or toxic gases.
- In case of liquid replacement (crude oil to distillates) the contractor will remove all crude oil remnants or fat materials from the inner shell of the tank, from the roof standing position up to the maximum roof position height by use of a high pressure steam or water or any suitable solvent or detergent as approved previously with EAPC's liaison; the resulted water with traces of crude oil will be disposed by EAPC through its own dirty water recuperation processes.
- At the end of cleaning work, the site (secondary containment dike and surroundings) has to be clean and neat. All equipment, materials, and waste should be removed.

- Supply of mobile power generator for power requirements for BLABO equipment.
- Crane operation inside the dike to load / unload equipment.
- Crane operation for lifting pipes and nozzles on the floating roof
- Acquiring the necessary working visas for foreign nationals on EAPC ground

- **<u>NOT INCLUDED (will be executed by EAPC team or other EAPC contractor):</u>**
    - lowering legs in maintenance position,
    - disconnecting the tank from outer energy sources,
    - blanking and blinding,
    - main valve removal,
    - closure of main pipeline with a proper connection for sludge pumping, the diameter of the connection should be requested in advance,
    - separation of solid material such as sand from the output fluid,
    - Water separation from fluid sludge.
    - Disposal of "dirty water" provided that the detergent / solvent was approved for use in tank cleaning by EAPC's liaison.

Relevant standards

- API2003 Protection against ignitions arising out of Static, Lightning, and Stray Currents 7th edition
- API Recommended Practice 2009 Safe Welding, Cutting, and Hot Work Practices in the Petroleum Industries
- API2015 Requirements for Safe Entry and Cleaning of Petroleum Storage Tanks 6th edition
- API RP 2016 Guidelines and Procedures for Entering and Cleaning Petroleum Storage Tanks 1st edition
- API Recommended Practice 2201, Safe Hot Tapping Practices in the Petroleum & Petrochemical Industries
- API 2217A Guidelines for Safe Work in Inert Confined Spaces in the Petroleum and Petrochemical Industries.
- API Recommended Practice 2219.5 Safe Operations of Vacuum trucks in Petroleum Service
- API 2026 Safe Access/Egress Involving Floating Roof of Storage Tanks in Petroleum Service
- NFPA 30 Flammable and Combustible Liquids Code 2015 edition
- NFPA 77 RECOMMENDED PRACTICE ON STATIC ELECTRICITY, 2014 Edition
- ATEX 95 equipment directive 94/9/EC, Equipment and protective systems intended for use in potentially explosive atmospheres

Drawing list:

- roof_50m_00230290.tif, roof view for 50 m diameter tank, Appendix O
- shell_50m_00230325.tif, shell view including shell openings, Appendix P
- roof and shell appurtenances_60m_00070320.tif, roof view and description / location of shell appurtenances, Appendix Q
- roof and shell_80m_central pontoon.jpeg for 80 m diameter tanks, shell openings and roof appurtenances, file of 39 Mbyte will be sent by JumboMail.

- roof no central pontoon_80m_00070095.tif, roof view including appurtenances, Appendix R

Timetable for work: maximum 45 calendar days from the start of the installation in the tank dike, not more than 3 months from receiving the order.

Services rendered for the contractor:

- Power supply up to 80 A on low voltage (400 V) three phase electrical supply to be connected by a local certified electrician on appropriate board (according to Israeli Electric law requirements). However the contractor has to place a mobile generator suited for BLABO equipment requirement (about 400 kVA)
- Water supply from the firefight grid – not potable
- Waste disposal
    - Pumped sludge in the main pipeline – unlimited quantity.
    - Waste water from rinse – up to about 100 cubic meters / tank on a day by day approval with Operation department
    - small items such as dirty rags – reasonable limited quantity,

Safety requirements:

- All work has to abide by local Israeli safety requirements as stated by the law and the Israel Institute for Occupational Safety and Hygiene.
- On top of that the safety requirements of API, including and not limited by the relevant standard list.
- Oxygen critical levels – RED less than 16%, YELLOW between 16% and 19.5%, GREEN above 19.5%
- Toxic gas (H2S) critical levels – RED, above 100 ppm, YELLOW between 10 and 100 ppm, GREEN below 10 ppm.
- Flammable gas critical levels – RED, above 20% LEL, YELLOW, between 10% and 20% LEL, GREEN, below 10% LEL
- Entrance is forbidden in a confined space that has even one of the above: concentrations of over 100 ppm of H_2S or more than 20% LEL flammable gas concentration, or the Oxygen concentration less than 16.0%.
- Entrance is permitted without respiratory apparatus in a confined space that has less than 10 ppm of H_2S, less than 10% LEL flammable gas, and more than 19.5% oxygen in air.
- If no RED level is present and even one YELLOW level concentration the entrance will be permitted with a breathing apparatus only
- In order to grant entrance to the confined space, average values will be measured, especially during noon times.
- Work done on EAPC ground is subject to EAPC safety requirements with accent of the following list (included translated):

Explanation of the procedure	Safety EAPC procedure number	Appendix
Ground rules for safe work on EAPC ground	2-30-000	A
Procedural rules and safety requirements in EAPC plants	2-30-001	B
Behavior rules and safety requirements during work on floating roof of an active storage tank that is not GAS FREE	2-30-002	C
Planning and entering an aboveground storage tank for the purpose of cleaning it	2-30-005	D
Requirements for electrical and electronics work in dangerous environments	2-30-009	E
Behavior requirements at entering an AST	2-30-012	F
Caution means of protection against flammable, toxic gases or loss of oxygen and GAS FREE definition	2-30-019	G
Work execution inside crude oil storage plants in digs and pools	2-30-020	H
Contractor worker training in safety procedures	2-30-021	I
Safe use of cranes on EAPC ground	2-30-024	J
Safe Transportation of crude oil in road tanks	2-30-025	K
Safe work on high ground.	2-30-060	L
Locked and Tagged safe procedure (LOTO) for equipment in service, maintenance, dismantling and assemble	2-30-061	M
Work permit for hot work procedures in dangerous environments on EAPC's ground	9-11-01	N

- Additional safety requirements as stated by the local EAPC Safety officer in a daily work permit that will be issued every day at first business hour.

Observations – Entering a confined space will require a work permit, including a rescue team on standby, explosive atmosphere per se makes entrance of operators impossible and equipment in that zone has to be ATEX certified for the proper zone.

Security concerns:

All personal has to be cleared before with the Security department, lists with name and ID numbers have to be provided, and a reasonable amount of time should be allotted for Security department to check. Personal that didn't get the Security clearance won't be allowed to enter the premises.

Work description:

The contractor has to arrive at the work place with full equipment, including independent administration, work manager in charge with the operation, and means to store the equipment to be used in the field. All consumables should be neatly stored, access ways should be open at all times and the cleanliness of the site should be preserved.

If needed, impermeable sheets should be used to store dirty equipment. No waste should be deposited on the land.

Before emptying the tank Operation department will proceed with sludge level measurement in several points on the tank floor. This measurement and a sample of the sludge will be delivered to the contractor.

Based on these measurements and the sludge sample the contractor will provide an **estimate of time needed to clean the tank**.

BLABO:

1. First phase – Installation:

1.1. EAPC will provide:

1.1.1. One 4" or 6" flanged end connection for fresh crude inlet, in an adjacent tank dike. The contractor will provide a stainless steel line of sufficient diameter connected by hydraulic connectors to supply fresh crude for BLABO requirements.

1.1.2. One 6" or 8" flanged end connection for sludge outlet located in the secondary containment (dike) area of the tank that has to be cleaned (usually a connection to the main tank line after the main valve has been dismantled)

1.1.3. A fully sealed roof, any existing leaks from the roof seal will be dealt by maintenance local crew.

1.1.4. Industrial water connection on the rim of the dike.

1.1.5. Various levels of tank liquid as requested by the contractor:

1.1.5.1. 20 cm under floating roof level to speed up the nitrogen injection for drilling holes and nozzle assembly

1.1.5.2. About 20 cm of fresh sludge over the sludge to be used in BLABO process, as requested by the contractor.

1.1. The contractor will provide:

1.1.1. Supply and installation of nozzle on Floating Roof or Shell Manhole, including nitrogen injection before drilling holes for nozzles

1.1.2. Supply and installation of pumps needed and lines to feed and discharge the crude / sludge.

1.1.3. Supply and installation of nitrogen generator, active carbon filters, scrubbers any other secondary equipment or installation for emission control.

1.1.4. Supply and installation of pipes between pumps, heaters, nozzles, any other equipment inside the dike.

1.1.5. Supply and installation of any necessary air ducts for ventilation

1.1.6. Supply and installation of flow meters to monitor the intake and outcome during the process

1.1.7. Supply and installation of gas sensors for flammable, toxic and oxygen levels inside tank shell/roof.

1.1.8. Any other work needed to start the process

Observation: at the end of the cleaning the pipes / nozzles will be removed by the

contractor.

2. **<u>Second phase – Lowering the oxygen levels by nitrogen injection and sludge removal</u>**:

2.1. Prior to injecting the fresh crude, the contractor has to lower the oxygen levels (usually lower than 8% volume) inside the tank, in order to achieve a nonflammable environment.
2.2. Batches of fresh crude oil will be injected to dissolve the sludge. Once a fluid stage is achieved the contractor has to remove the sludge from the tank and pump it to the designated outlet.
The quantities of fresh crude and liquid sludge have to be recorded, and the work has to be coordinated on a day by day base with Operation.

3. <u>Third phase – Wash , Rinse and Wipe</u>

3.1. Once the required level of sludge removal is achieved the contractor has to wash and rinse the inner tank with water and / or water with detergent at the contractor's choice.
3.2. At the end of the third phase the recorded levels of flammable gas should average below 10% LEL, without any peak above 10%, the toxic H2S should average below 10ppm, without any peak above 10 ppm, average oxygen levels should be over 20% with no instant low level under 19.5%. Ventilation through a proper filtration can be carried out at the end of wash cycle, as the contractors sees fit.
3.3. After achieving the above mentioned levels workers will be granted entry to wipe dry the tank, using clean cotton rags. If any odorous emission is noticed, the contractor will have to install a forced ventilation system with proper filtration until there is no odorous emission.
3.4. The inside of the tank is considered confined space. Consequently work will be done during working hours of EAPC, and a rescue team will be provided by EAPC during normal work hours, at least 7 hours net per day.
3.5. Dismantling of roof seal and drain pipes will be done by EAPC / other contractor. The cleaning contractor has to allow reasonable time for dismantling (usually one day) and provide additional cleaning for the seal and drain after dismantling (water, detergent, rugs)
3.6. In case of inner shell cleaning, EAPC will provide industrial water (non-drinkable sweet water) in the amounts needed, while the contractor will provide steam generators, pumps, detergents (approved in advance by EAPC) or other solvents (ex. Diesel oil); the contractor will provide mechanical work to anchor and lift and move the high pressure nozzle, until the inner shell is free of dirt, fat materials and any other crude remnants

4. <u>Fourth phase – Demobilization</u>

4.1. Dismantling the nozzle / pipes. The contractor is not required to close the gaps in the roof after dismantling the nozzles.
4.2. All equipment inside secondary containment and tank has to be removed
4.3. Transport the equipment to a safe designated storage

Observations:

1. The functioning of the system will be allowed during nights and week-ends under operator supervision. If installed by the contractor, steam generator will be able to deliver steam during the night too.
2. The quantities of fresh crude oil and the removed sludge should be approved in advance with Operation department on a day by day base. The aim is to remove about 150 cubic meters per day, and at a minimum, 100 cubic meters. The quantities will be monitored on a daily base.

GENERAL OBSERVATION:

During work, at all stages, the zero emissions requirement should be respected – no detectable emissions will be allowed during the cleaning process.

Supply of materials:
The contractor will supply all the necessary materials, including diesel fuel, detergent and cleaning rags, needed to complete the job.
Beyond supplying the fresh crude oil and industrial quality water, EAPC will not supply any other material.
All the materials classified as dangerous materials will be handled accordingly and will have a MSDS attached.

Responsibility:

The contractor state that is acquainted with the scope of work, has done this kind of job before, has taken knowledge of the technical specifications and drawings and is able to complete the work without any incident.

Rescue team:

In case that entrance in a confined space is needed, EAPC will assure, during normal working hours a rescue team, on standby.
The rescue team will be the responsibility of EAPC, but will be available only 5 days a week during normal working hours. Extending this time will be granted according to EAPC resources available and charged accordingly from the contractor's account.
No external rescue team will be allowed on EAPC premises.

Payment:

Before opening the tank EAPC will measure the sludge height across all measuring openings, sampling openings, and any other available openings on the roof.
The full measured map will be transmitted to the contractor and will serve as preliminary calculation of average sludge height.
After draining the tank, one delegate for the contractor and one delegate for EAPC will measure the sludge height through as many roof openings as possible.

According to their findings, the average sludge height will be calculated and agreed upon including a timetable for the cleaning job.

1. Reimbursement will be calculated according to the quantity of sludge found at the opening of the tank with a minimum guaranteed quantity and incremental pay for additional quantities of sludge. as follows:
   1.1. Average sludge height up to 12 cm (minimum guaranteed quantity) as a base pay
   1.2. Average sludge height between 12 and 18 cm (18 included) as a 25% base pay increase
   1.3. Average sludge height between 18 and 24 cm (24 included) as a 45% base pay increase
   1.4. Average sludge height between 24 and 30 cm (30 included) as a 60% base pay increase
   1.5. Any additional sludge height over 30 cm for each additional cm the equivalent of 50 m^3 for an 80 m diameter tank, 28 m^3 for an 60 m diameter tank and 20 m^3 for an 50 m diameter tank.

Observation: All the tanks are equipped with side entry mixers, and EAPC mixes the crude on a regular basis, before tank opening we increase the mixing in order to lower the sludge level. In all our recorded history, we never had more than 30 cm of sludge average and the main distribution is between 12 and 24 cm.

2. Separate payment for mobilization / demobilization and installation of equipment in secondary containment dikes differentiate according to the size of the tanks.
3. Bulk payment for all consumables to clean the tank (including activated carbon, diesel oil, cutting stock, personal protective equipment, detergent, and so on), differentiated according to the size of the tank.
4. Daily fines for failing to meet the agreed timetable are 4,000 euros per day.

The mobilization price quoted in the bill of quantities has to include staff/overhead, local organization (including crane costs, safety equipment, local transportation, local housing for working crew, visas required for foreign nationals), flight tickets for crew, all other expenses.

Observation: the timetable is measured in working days, and BLABO process will be allowed to continue 24 hours, seven days a week, provided that there are shift operators that work less than the allowed period of hours stated in the Israeli law (46 hours weekly).
Any other activities have to be conducted on a 5 working days per week, 8 hours work day.

Appendix A

Safety	Safety Instruction no. 2-30-000	Edition: 2/1990
page 1 of 5	Summary of the risks and basic rules for safety at work at EAPC facilities	Update 8: 8.13
	Approved: Boaz Harel, Head of Safety and Environmental Protection Division	

Persons working at the company EAPC and/ or in its behalf must comply with the safety laws and regulations of the State of Israel and the safety instructions of the company. This safety instruction presents milestones only. The detailed safety instructions must be read thoroughly and understood. Summary of the hazards: works with hazardous materials, oil and its products – fire hazards, explosive, toxic gases, oxygen depletion, work at heights, work in confined spaces, work in trenches, hoisting works, tripping and falling, marine and submarine works, injury caused by engineering mechanical tools and work tools, harmful noise, hydraulic and pneumatic systems under pressure, remote control systems, turning equipment, electricity, radiation, weather and transportation means.

1. Fire prevention

1.1. Use of fire requires planning in advance and prior written approval
1.2. It is absolutely forbidden to smoke at all the company oil facilities (except approved places)

2. In dangerous zones, work according to the rules

2.1. Check the zone limits, coordinate in advance every entry to the dangerous zone
2.2. Remember you must obtain prior written approval for hot works, electricity and control (with powered equipment), digging works and servicing, installation or dismantling of equipment.
2.3. It is forbidden to use electrical equipment, including mobile phones, in dangerous zones. Comply with the signs posted on the complex premises.

3. Wear orderly work clothes

3.1. Make sure you wear an protective helmet when working in the complex (excluding the offices area as detailed in instruction 2-30-40)
3.2. It is mandatory to wear standard safety boots working on the complex premises
3.3. Use personal protective equipment for any work as required.

4. Use suitable work tools in good working order

4.1. Make sure your work tools are intact and in good working order
4.2. It is forbidden to improvise tools. Check in advance that you have all the tools needed for the performance of the work.
4.3. It is forbidden to use hoisting and pressure equipment that was not dully inspected, marked and labeled.

5. When driving a vehicle comply with the traffic code

5.1. Comply with the speed limitation at the facility
5.2. Drive according to the road and area conditions

6. Carry out your work using safe machinery and equipment

6.1. Coordinate in advance the use of machinery or engines
6.2. Make sure the machinery cannot be operated uncontrolled during your work
6.3. Mark and post clear signs at your work place

7. Do not perform electrical works without permit

7.1. Electrical works shall be performed by a certified electrician only

7.2. All the works shall be performed in compliance with the Electricity Law and according to the company instructions and directions

8. Do not access a site marked "Ionizing radiation area" (radioactive or Roentgen radiation)

8.1. Only certified radiation workers are permitted to access ionizing radiation areas
8.2. Entry to an ionizing radiation area without permit and without taking the required safety measures endangers your health

Summary of the procedure for obtaining a permit for hazardous works and hot works at the company facilities (procedure (9-11-01)

A general work permit and a daily work permit must be issued for any hot work, or irregular work, or special hazard work. The executor (contractor representative or company employee) must submit a work permit request as detailed in the form below. A general permit will be prepared according to the request, as detailed in the form attached below. The executor will apply for a daily work permit every work day. A daily work permit will be approved on the request form.

The works detailed below require a hot work permit- if they are performed on the complex premises and at the oil facilities in their vicinity (excluding the workshops buildings and their premises) and along the oil pipelines:

Welding, soldering, cutting (disk, burner, arc air), grinding, mechanical cleaning (rotating brush, needles, etc), sand blasting, any work performed above and/ or near an oil tank or ballast – except for operation works such as: sampling, manual measuring, etc. lighting fires such as: tar heating, waste burning, etc, any work that, on the permit issuer opinion, involves a hazard of spark or heat generation. Use of vehicles and portable equipment with internal combustion engine requires a permit, at any time, if the vehicle gets down the road or the paved path on the complex premises. Digging near and above oil or ballast pipelines.

Connection or disconnection works of a tank or active pipeline, or works where a explosive atmosphere is present or is likely to be present (except regular operation works/ maintenance for which a operation/ maintenance instruction must be issued, detailing the hazards of the explosive atmosphere).

Works with special hazards/ irregular:

1. **Confined area works**
2. **Exceptional Work at heights**
3. **Construction/ demolition works**
4. **Digging works/ trenching works**
5. **Exceptional hoisting/ loading works**
6. **Exceptional daily works**

Request for work permit/ daily work approval

Date: ____ Executor: ____ work manager: ____ site: ____
system: ____ site: ____ contract/ work instruction no. : ____

_____
_____
_____
_____
_____
_____

Details of the tools, methods and means to be used for the work : ____

_____
_____
_____
_____
_____
_____

Name and signature of the applicant: ___

Approval of Daily Work for the above work request

On date ___ from hour ___ to hour ___ per work permit no. ___
From date ____
Additional conditions and limitations for the permit:

_____
_____
_____
_____
_____
_____

Approve Daily work approval (operation department manager/ maintenance department manager/ safety manager/ fire fighting manager/ contractors inspector/shift manager) (name and signature):
Executor approval: the work and safety instructions included in this certificate and in the work permit are understood by me and the work will be performed accordingly.
Executor name and signature: ----
The executor will notify control/ launching prior to the beginning of the work and on work completion:
Control/ launching was notified of the beginning of the work at: ____ (name of the notification receiver) ____
Control/ launching was notified of work completion at: ____ (name of the notification receiver) ____
A printed, legible, clear and signed copy of this form must be available at the work site.
A scanned/ photocopied signed copy of this form shall be sent to control/ launching, safety manager, contractors inspector, head of fire fighting department.

Introduction

The safety guidelines detailed below are based on the laws of State of Israel, workplace safety regulations issued by the Israeli government, publications of the Israel Institute for Occupational Safety and Hygiene and of various fuel companies and oil research institutes in Israel and abroad.

In no event should these guidelines replace or cancel any law or regulation on the subject. In such cases one must act in accordance with the law.

Specific safety guidelines have been issued on various typical subjects and assembled in the company's safety folder. This folder should be consulted for such subjects. Certain types of work, for instance, work with an open fire, require written work permits. For the full list of types of works requiring written work permits and obtaining work permits, see the work procedure 9-11-01 "Obtaining permits for carrying out works involving fire hazard and/or hazards".

The safety guidelines contained in this brochure are intended for all those present at the company's facilities (facilities' workers, contractors and their employees, visitors and guests).

It is impossible to foresee all the situations that might occur at fuel facilities where different and varied works are being carried out and where there is always a risk of ignition and/or explosion. Continuous alertness with regard to unpredicted dangers and preparedness to seek new solutions to safety problems caused by the changes occurring in the facility's and its equipment's operation are capable of notably reducing the accidents' probability and severity.

The rules of behavior in these guidelines are listed by subjects, with a separate section dedicated to each subject.

The first section comprises general safety guidelines that define the ways of behavior at the fuel facilities, as well as the definitions that are significant for maintaining the appropriate level of general safety at the facility. Other sections contain safety guidelines relating either to certain types of works or to works that are carried out in unconventional ways.

The concern for safety and for the prevention of fires and damage to property and to humans is a duty of everybody present in the facility's area. The attention of any person found of having violated the safety rules, either deliberately or accidentally, should be immediately drawn to the fact that everybody is obliged to protect his/her own safety.

Hazardous areas

For the purpose of these safety guidelines – an area should be considered hazardous if it meets the description and definition of any of the three types detailed below:

a. Hazardous area, type 0 – any place where flammable gases are present for the whole period of operation under normal operating conditions, as well as any trench present in such area for its whole length.

   Examples: floating roof of a tank, tank in the process of cleaning prior to being approved as "gas free", etc.

b. Hazardous area, type 1 – any place where flammable gases are likely to be present under normal operating conditions, as well as any trench present in such area for its whole length.

   Examples: tank's trap, pumping station, drains, gages site (a place where a leak is anticipated of fuel or gases in the course of the systems' normal operation).

c. Hazardous area, type 2 – any place where flammable gases are likely to be present as a result of a failure or of an abnormal operation, as well as any trench present in such area for its whole length.

Restricted areas:

For the purpose of these safety guidelines – all areas in the vicinity of hazardous areas should be considered restricted areas. The whole area of a fuel facility belongs to such areas, with the exception of such its areas that are explicitly defined and signed as non restricted areas. Likewise, the whole area within the radius of 100 meters from a fuel tanker ship should be considered a restricted area (with the exception of cases when the tanker ship has been checked and found "gas free", and hot works have been approved on such ship by a body authorized by law to issue such approvals).

1 General

1.1 These guidelines are mandatory for all those present in the facility's area, either the facility's workers or visitors, contractors for works carried out in the facility's area and their employees, who must thoroughly observe them.

1.2 The maintenance and repair works on operational / emergency equipment should be carried out in coordination with, and subject to approval by, the management / dispatchers, including the time window needed for the work accomplishment. The effects should be taken into account of the work upon the system, including in the event of failure. At the end of work or at leaving the place, you should report to the management / dispatchers on the equipment's status.

1.3 The maintenance and repair works on the equipment used by a certain department / unit should be carried out in coordination with, and subject to approval by, the department / unit manager, including the time window needed for the work accomplishment (e.g., work on a tugboat should be coordinated with the port manager, while work on a lift truck of the LPG department should be coordinated with the LPG department manager). The effects should be taken into account of the work upon the system, including in the event of failure. At the end of work or at leaving the place, you should report to the department / unit manager on the equipment's status.

1.4 Every new worker at the fuel facility should be instructed by his superior on the general safety guidelines and the safety guidelines relating to the equipment to be operated by him for the purpose of his work. The superior and other workers are also obliged to brief the new worker on the dangerous conditions and situations that might take place in the course of his work or as a result thereof.

1.5 The emergence should be prevented of situations that are dangerous from the safety point of view. Every worker should do his best to eliminate safety risks whenever he finds himself in such situations. If unable to overcome the situation on his own, he is obliged to inform his superior for the purpose of taking all necessary measures. In any case – even if he has succeeded to overcome the situation on his own – he should report the event to the superior. Every work accident and every dangerous event that might have resulted in an accident should be reported to the immediate superior, the department manager and the facility manager, irrespective of the event's severity. The examination and analysis of an accident or of a

dangerous event and their circumstances by the authorized bodies would allow the facility's management to take the necessary measures for preventing the accidents' recurrence in the future.

1.6 Do not distract the worker carrying out a task requiring his full attention, for example: work on a ladder, driving a vehicle, operation a machine, carrying loads, and the like, in which a lack of sufficient alertness may result in an accident.

1.7 Every worker at the facility is obliged to know the location of the first aid kit (/-s) nearest to his place of work. Such kits should be checked from time to time by those responsible for them, and in the event of absence of any items (in accordance with the respective standard), such items should be replenished promptly.

1.8 Everyone is obliged to assist a person (/-s) injured in an accident and to provide the first aid as necessary. Since in certain types of injuries the victim's moving from the place is capable of aggravating his state, therefore prior to any action it should be made sure that it would not worsen or complicate the victim's state. In any case of doubt, an ambulance service should be summoned. If the victim of a work accident loses much blood, or is electrocuted and is unable to release himself, or needs artificial respiration – a speedy action is extremely important and essential at the time of providing the first aid. The fuel sprayed on the victim's body should washed off with water and soap, since leaving the fuel without washing it off is likely to cause the skin inflammation. If a victim has suffered electrical shock from "live wires" and it is impossible to disconnect the current, the wires should be removed from the victim. This operation should only be done while wearing rubber gloves, or with the hands wrapped in a thick dry cloth, or using a non metal tool.

1.9 No worker with open wounds should carry out such works as painting, metalworking or handling fuel products. Such wound must be bandaged.

1.10 Safety signs and posters are placed in the facility and intended for the workers' guidance and warning with respect to accidents. Everybody present at the facility is obliged to behave in accordance with the instructions and directions written of them.

1.11 Strict observance of order and cleanness is the main factor in the accident prevention; therefore a care should be exercised for their maintenance everywhere across the facility, ether during the work hours or after them. Every worker must leave his working place in good order and clean at the end of work.

1.12 Fuel containers should be completely sealed, particularly in confined spaces. Fuel vapors emitted from any container – even the smallest one – may be extremely dangerous.

1.13 Do not lift or carry a load exceeding the human's ability of safely handling it. Heavy loads are only permitted to lift while strictly observing the rules of correct lifting (relying on one's leg muscles and keeping the back upright). Appropriate lifting accessories should be used, whenever available, for the purpose of lifting heavy loads. It is forbidden to stand under the lifted load (suspended from a crane, winch etc.). It is generally advisable to keep off the places where objects and tools are prone to falling and causing harm.

1.14 The lifting works should be carried out by a holder of appropriate permit and by means of appropriate and inspected equipment conforming to the standards. See the guideline 2-30-024. At the time of receiving and unloading merchandise and goods, it should be assured that the packaging is in order and would not open or fall apart in the course of lifting. At the time of opening the packages and containers one should stand in a place where the container's / package's door would not fall or open in full swing towards the worker (in the case that the merchandise has moved from its place in the course of transportation and is resting upon the door).

1.15 Do not leave tools and objects at the places of people's passage where they may pose an obstacle to the walking workers and cause injuries. Tools and objects should not also be left at the places (particularly at height) where they may fall and hurt the passerby.

1.16 Do not clean clothes while being worn by means of compressed air.

1.17 Places of excavation works should be fenced in order to prevent the risk of falling into trench. Appropriate warning signs should be posted next to such places and, if necessary, illuminated at nighttime.

2 Clothing and Personal Protective Equipment

2.1 Protective helmets should be worn in any place and at any time of work at the complex, except in the office area and as detailed in the guideline 2-30-040.

2.2 All workers at the facility should wear safety shoes complying with the Israeli Standard 1112 and furnished with antistatic soles. The exemption from the obligation of wearing such shoes could only be issued on the basis of an argumented medical permit that should be recorded in the worker's personal file. The wearing of studded shoes with metal studs is definitely prohibited in the areas defined as hazardous.

2.3 A worker is obliged to wear standard-compliant work clothes made entirely of cotton (except coats) that are as clean and ordered as possible. Do not wear short trousers. It is forbidden to work without a shirt on in a sleeveless shirt.

2.4 If the work requires standing inside the fuel, it is obligatory to wear fuel proof safety boots. The fuel proof safety boots should have antistatic soles and protective pads.

2.5 Clothes should not be put on and off in hazardous areas. When it is necessary to put off a coat etc., one should exit and put the clothes off outside the hazardous area.

2.6 Do not wear clothes soaked with a raw fuel or with its products. In the case of wetting they should be changed without delay. In any event do not get close to the source of fire or sparks while wearing clothes soaked with fuel or with any other flammable substance.

2.7 Do not wear loose clothes close to the moving machinery. Such clothes, belts and tatters are prone to be caught inside the machine's moving parts and to inflict bodily harm.

2.8 Do not use gasoline or other solvent for cleaning the clothes.

2.9 In the course of welding, it is obligatory to wear long sleeved clothes, long trousers, welding apron, welding helmet, safety goggles or face shield. See the guideline 2-30-055 "Welding and cutting works by means of electric arc, flame and disk".

2.10 A worker is obliged to wear safety goggles while carrying out grinding or chipping, in working with, or using of, chemicals or fuel additives, in sampling the tanks or fuel pipelines, while carrying out painting, sand blasting, fuels' laboratory analysis, welding, polishing, as well as in any other work in the course of which a substance or foreign object may enter the eye.

2.11 A worker is obliged to wear an appropriate protective suit with a fresh air supply apparatus while carrying out sand blast cleaning.

2.12 While carrying out a work involving the handling of hazardous materials, one should work in accordance with the directions of the Material Safety Data Sheet (MSDS) for

the respective materials. See the guideline 2-30-062 "Using hazardous materials". While dealing with acids or other corrosive materials, one should wear safety goggles, suitable rubber apron and gloves, as well as a hat.

2.13 While working on the high or extra high voltage facilities, one should use the personal protective equipment specified in the guideline 2-12-001 "Safety in carrying out switching operations at high and extra high voltage".

2.14 While carrying out diving work, one should use the diving equipment specified in the guideline 2-15-001 "Safety in diving work at sea".

2.15 In the absence of suitable protective equipment for carrying out the work, the worker should draw the superior's attention to such fact and to act in accordance with his instructions.

2.16 While carrying out works with hazardous materials, one should use the personal protective equipment specified in the MSDS for the respective materials.

3 Fire prevention and extinguishing

3.1 All workers at the fuel facilities should constantly remember about the fire hazard present in all parts of the facility and at all times. Every worker should learn and well understand:

3.1.1 How to prevent the fire ignition;

3.1.2 How to extinguish the fire (in the case of a fire accident);

3.1.3 How to prevent the fire expansion (in the case of a fire accident);

3.1.4 How to report and alarm the responsible bodies in the case of detecting a fire.

3.2 Do not use open flame sources in hazardous areas unless approved in writing by the facility's management. The meaning of an "open flame source" is as follows: open fire; burning metals; welding and soldering equipment; non approved heating appliances; electrical equipment (lamps, cables, motors etc.), that have not been approved by the authorized bodies for using in hazardous areas, and any other equipment that produces heat to the extent sufficient to ignite flammable materials.

3.3 Do not use open flame sources in restricted areas, except in the cases when a prior approval has been obtained for such operation from the facility's manager or from another person authorized by him for such purpose.

3.4 Smoking is absolutely forbidden in hazardous areas and in restricted areas, except in the places approved for such purpose.

3.5 Do not carry matches and lighters, except in the places where smoking is permitted.

3.6 Hand torches and communications devices of the kinds approved for use in hazardous and restricted areas are allowed for using in such areas. The dismantling and changing of batteries in such appliances should be only carried out outside the restricted areas. It is forbidden to use non approved equipment, unless a "Fire work approval" has been issued for the purpose of such use.

3.7 Use of cellular phones is forbidden in hazardous areas and in restricted areas, except in the office area and inside a vehicle permitted to enter such areas.

3.8 Oil tanks with a volume exceeding 10 liters should be filled by means of a filling tube the end of which should be entered almost down to the tank's bottom. Do not fill such tanks by sprinkling in order to avoid the risk of static electricity formation.

3.9 Do not use compressed air or oxygen for the purpose of flushing and draining the oil pipes and tanks.

3.10 The spillage of flammable liquids into the central sewage system is forbidden. Such liquids spilled into the central sewage system may arrive to the places where an open flame exists and therefore present a fire ignition hazard.

3.11 Do not remove fuel from the floor by means of a broom or a brush; use only a rag for this purpose in order to avoid the possible formation of of sparks that may ignite the fuel.

3.12 Do not leave in the facility's area materials like sawdust, waste, rags, wood, paper etc. All such garbage should be collected in closed containers and disposed of as soon as possible.

4 Entering and working in hazardous areas

4.1 It is strictly forbidden to enter for the purpose of work a Type 0 hazardous area, as well as the area within the radius of 16 m around it, other than in accordance with the emergency evacuation plan to be prepared by the facility's manager.

4.1.1 The ascent and work on the fuel tank's floating roof that is defined as a Type 0 area should be only carried out in accordance with the safety guideline 2-30-002 rather than in accordance with these guideline.

4.2 The entrance for the purpose of work to Type 1 and Type 2 hazardous areas, as well as to the areas within the radius of 16 m around them, should be only carried out subject to permission by the safety officer, the head of the facility's fire safety section or any other person authorized by the facility's manager for such purpose.

4.3 The entrance to the hazardous areas is forbidden to any vehicle with a gasoline or diesel engine, including motorcycles, and to bicycles equipped with electrical lights, unless a "Fire work approval" has been issued for their entrance.

Engineering mechanical equipment with diesel engines should be only allowed to enter hazardous areas if a spark arrestor is mounted on the exhaust tube, subject to permission in accordance with paragraph 4.2 above.

4.4 Do not restart a switched off engine in a hazardous area unless a starting permit has been received in accordance with paragraph 4.6 below.

4.5 The operation of motorized mechanical equipment in a hazardous area should be only carried out subject to permission by the complex's maintenance department manager or by a person responsible for the contractors and subject to examination by the safety officer, the head of the facility's fire safety section or any other person authorized by the facility's manager for such purpose.

4.6 The operation should not be permitted of the equipment in accordance with paragraph 4.5 above unless a person is present who is authorized to issue such a permit because:

4.6.1 The equipment is driven with an explosion protected diesel or electric engine.

4.6.2 The diesel engine:

- Has a serviceable and complete exhaust system.
- A spark arrestor is mounted on the exhaust tube.
- The exhaust tube does not face a fuel puddle or a source of flammable gases.

- The equipment will be started either after checking the absence of explosive atmosphere at the place and at the time of starting, or outside the hazardous area (the electrical system is not explosion protected!).

5 Work tools

5.1 The type of work tool should be suitable to the work to be carried out therewith. The use of inappropriate tools is the cause of numerous accidents.

5.2 Do not leave unused work tools spread on the floor where they may pose an obstacle to the passerby, or at high places from which they are likely to fall and injure someone.

5.3 The serviceability should be assured of the tubes and fittings of the employed pneumatic tools. It is forbidden to operate them at a pressure exceeding the permitted operating pressure.

5.4 The use of lifting equipment, including lifting chains and ropes, is only permitted on the condition that a valid inspection certificate exists for such equipment. The equipment should be inspected at the appropriately specified intervals and only by an authorized inspector.

5.5 Do not use files without proper handles.

5.6 Do not use hammers with cracked or loose and unsecured handles.

5.7 Grinding wheels and disk saws should be only used if protected with the appropriate guards.

5.8 Work at height should be carried out in accordance with the guideline 2-30-060. Do not use rickety ladders or ladders that are likely to slip on the floor.

- Prior to using a ladder and climbing it, make sure that the ladder is placed properly and safely, without risk of being knocked down by a passing vehicle or by an opening door.
- A ladder is considered placed properly and safely if its slope ratio is about 1:4.
- While climbing the ladder, the climber's hands should be free for the purpose of holding the ladder safely.
- While climbing the ladder, do not keep tools and equipment with your hands.
- Do not leave portable ladders leaning on the walls or guardrails when not in use, they should be stored in the places intended for such purpose.

5.9 Do not keep sharp edged tools in the clothing pockets.

6 Driving and using vehicles

General: For the purpose of this section, the meaning of "vehicle" is any means of transportation or carriage, either self propelled or towed, as defined in the State of Israel's transport laws.

6.1 Only holders of valid and appropriate driving licenses are permitted to drive a vehicle in the facility's area.

6.2 The maximum permitted travel speed in the facility's area should be marked on the traffic signs placed along the roads across the facility. In no event should the maximum permitted travel speed exceed 40 km/h at the Eilat complex and 50 km/h at the Ashkelon complex.

6.3 The vehicles' parking at parking lots should be always done so that the vehicle's front end is facing the traffic direction, and the vehicle leaves the parking lot while moving forward.

6.4 Do not park or leave a vehicle at places where it may pose an obstacle to the traffic of other vehicles, particularly of the fire trucks.

6.5 Do not leave an empty vehicle with the running engine.

6.6 Do not operate vehicles inside closed and non ventilated buildings, except in the cases of moving from one place to another inside the building and only for a very short time needed for carrying out such operation.

6.7 A vehicle parked inside a tanks site or next to a pumping station should always be left not locked, with its ignition key inside the ignition switch, ready for being immediately started in the case of emergency.

6.8 Remember – the entrance of motor vehicles into hazardous areas is forbidden, see section 4 above.

6.9 Do not open the vehicle fuel tank's cap or refuel the vehicle while the engine is running.

6.10 Do not open the vehicle radiator's cap while the engine is hot.

7 **Machinery maintenance and operation** (see the guideline 2-30-061 "Lock-out – tag-out (LOTO) of equipment in the course of handling, repair, maintenance , dismantling or installation")

7.1 Most machines, such as pumps, compressors, motors and mixers, at the company's facilities are remotely controlled. Prior to handling them, one should coordinate such action with the operation center and to exclude the possibility of their remotely controlled operation by means of lock-out – tag-out.

7.2 The machines' and pumps' operation should be only carried out in accordance with their operating instructions.

7.3 Prior to operating a machine, one should assure that all the guards around the machine's moving parts are in their places, and that everyone in the machine's vicinity is situated at a safe distance from the engine and from the moving parts.

7.4 Do not ascend the machine while it is in operation, and do not place heavy objects on the machine.

7.5 The handling of the machine's moving parts while it is in operation is absolutely forbidden, except for the purposes of checkup, lubrication or regulation (see the Work Safety Ordinance [New Version], 1970, Part C, paragraph 38).

7.6 Do not clean or paint the engine while it is running.

7.7 Do not dismantle or assemble the engine belts while the engine is running or is in the "Ready for immediate operation" state. Prior to carrying out the work, one should assure that the possibility is excluded of the engine's operation.

7.8 The handling of the engine or of the machine is only permitted if all measures have been taken for preventing the operation at the time of such handling.

7.9 The maintenance or repair of a pumping unit driven by an electrical engine should be only carried out upon disconnecting the power supply to the engine by means of:

- Taking off the main fuses or disconnection of the main circuit breaker;

- Retrieval of the main circuit breaker cart (for a high voltage engine).

The above operation should be only carried out by a certified electrician. The disconnection of control circuit breakers does not provide sufficient protection!

7.10 It is forbidden to clean an electrical engine with water, one should only use cleaning substances approved for such purpose.

8 Electric works and electric equipment

8.1 Repair and adjustment works on electric equipment and systems should be carried out by an electrician holding an appropriate certificate for carrying out such works.

The maintenance and handling of high voltage equipment should be carried out in accordance with the technical guideline 2-12-002.

8.2 Any deviation from the electric equipment's correct and normal operation should be immediately reported to the manager of the maintenance department or, in his absence, to the head of the electricity sector, or in the absence of those two, to the electrical engineer of the Eilat Ashkelon Pipeline.

8.3 Do not leave electric appliances and cables unnecessarily connected to the electricity network. They should be connected only at the time of their use and disconnected immediately afterwards.

8.4 Do not touch electric equipment with wet hands or while standing on a wet floor.

8.5 Prior to replacing an electric lamp, make sure that the fuse to which it is connected is turned off.

8.6 Do not use a electric cable in which a damage is detected. The equipment connected with such a cable should not be operated until the defected cable is replaced with a new and serviceable one.

8.7 In hazardous areas, only such equipment (flashlights, measurement and control instruments, cables, communication devices etc.) is allowed to use that is approved specifically for this purpose.

8.8 Electric cables and connectors should be protected against mechanical damage, impact of heat and contact with liquids.

8.9 The use of metal ladders or wooden ladders that are not completely dry is absolutely forbidden at work near uninsulated cables.

8.10 Prior to digging the soil, walls' demolition and drilling or floors' demolition, make sure, by means of a certified electrician, that they conceal no live electric cables.

8.11 The entrance and work in the high voltage areas is only allowed to persons authorized for such purpose in accordance with the technical guidelines 2-12-001, 2-12-002, 2-12-003.

8.12 Do not handle or open electrical cabinets or explosion protected appliances in a hazardous area before the power supply to the equipment is disconnected from the place outside the hazardous area. In exceptional cases, a permit should be obtained for work with fire, the absence should be continuously checked of flammable gases in the work area, and the work should be accomplished within as short time as possible.

8.13 Prior to the initial use of an electric appliance, its operation guide should be thoroughly studied and the presence should be assured of a standard sign.

8.14 It is forbidden to connect to a loose or broken socket.

8.15 Do not pull the plug with a cable.

8.16 An overload should be prevented (excessive connection of current consumers to the electricity connection points).

8.17 The use of extension cables is not recommended and is not intended for powering stationary electric appliances.

8.18 Do not open or remove covers over the areas containing open electrical connections or junction boxes.

8.19 Do not store objects in electrical cabinets or rooms.

8.20 The access should be assured to electrical boards, cabinets and rooms for the extent of at least 1 meter.

8.21 In the case of fire, do not spray water on electrical boards or equipment.

8.22 No live exposed conductors should be present at the work place.

8.23 At the end of work, all electric appliances should be disconnected.

8.24 **Portable electric appliances**

8.24.1 No portable electric appliance should be operated by a worker prior to his being instructed by an appropriate specialist.

8.24.2 If the appliance's plug is not of a standard type required in Israel, it should be replaced with a standard plug by an electrician.

8.24.3 Every portable electric hand tool (disk, drill etc.) should have a double insulation marked by means of a square inside a square symbol ( ) and powered via a residual-current circuit breaker with the sensitivity of 30 mA.

8.24.4 A double insulated electric appliance should not be grounded.

8.24.5 Electrical boards intended for powering portable electric appliances should be equipped with automatic residual-current circuit breakers with the sensitivity of 30 mA.

8.24.6 The use of extension cables requires conformance to the following requirements;

8.24.6.1 The cable should be unbroken for its whole length, without any damage to its insulation, suitable to the current consumed by the connected equipment and suitable to the conditions of work.

8.24.6.2 The plugs and portable sockets should be well protected; at the construction sites or in yards, embedded plugs and sockets.

8.24.6.3 If a cable is coiled on a drum, it should be spread to its whole length.

8.24.6.4 The cables should not be placed in such a way as to pose an obstacle; they should be protected against damage and stepping on them.

8.24.6.5 The cable should first be connected to the appliance and only then to the electric network.

8.24.7 In the case of fault or damage to the appliance, it should be immediately disconnected from the power supply, marked as defected and transferred for examination by an authorized electrician.

8.24.8 In any event of the appliance's maintenance or repair, it should be disconnected from the source of electric energy.

8.24.9 Do not leave an electric appliance connected to the electric network and unattended. An electric appliance should be disconnected from the electric power after every use thereof.

8.24.10 Prior to every use, the worker should visually check the appliance's integrity, make sure that it carries the double insulation symbol, check whether it is dry and free of dust and dirt, check manually the free movement of its moving parts and check the appliance's conformance to the intended operational voltage.

8.24.11 At the time of work with an appliance, it should be kept clean and dry; the tool's stable position should be assured in the course of using thereof; its handles should be kept dry; when necessary, personal protective equipment should be used.

8.24.12 A portable electric appliance should be stored at a shadowed place protected against moisture and dust.

8.25 Do not leave an electrical facility open and unattended. Prior to leaving, it should be locked.

8.26 Electrical works while standing on ladders should only be allowed for ladders made entirely of a non conductive material (wood, fiberglass or plastic).

8.27 **Personal protective equipment for electricians**

8.27.1 Prior to carrying out the work, make sure that you have at your disposal all protective equipment necessary for the work and it is in good repair.

8.27.1.1 Wear **safety shoes**.

8.27.1.2 Wear **work clothing**: long tight fitting sleeves and long fastened trousers.

8.27.1.3 Wear **insulated gloves** suitable for the voltage.

8.27.1.4 Wear **protective goggles** in the course of facilities' switching, fuses' removal, working in the vicinity of live parts of the electric equipment or facilities. The goggles may be put off after the voltage disconnection.

8.27.2 In the course of work at an electric facility on the ground, do it while standing on an **insulated mat**.

9 Diving and working underwater

9.1 Diving works should be only carried out by authorized divers holding a license of the grade appropriate for the performed work.

9.2 Diving works should be only carried out in accordance with the technical guideline 2-15-001 "Safety guidelines for divers carrying out underwater work at sea".

10 Working with equipment emitting ionizing radiation (radioactive and X rays)

10.1 Work with equipment emitting ionizing radiation should be only carried out by workers holding a valid governmental permit.

10.2 The entrance to a site signed as an ionizing radiation area is forbidden to any worker (except the workers mentioned in paragraph 10.1) other than upon receiving an

approval for such entrance from a safety officer or from a person responsible for the radiation safety, and upon taking the necessary safety measures.

10.3 Work with and radiation emitting equipment should be carried out in accordance with the safety guideline 2-30-011 (this guideline has been put on hold: the radiation emitting equipment has been removed from the company).

Appendix C

Safety	Safety Instruction no. 2-30-002	Edition: December 1988
Page 26 of 105	Behavior and safety rules for entry onto and work on floating roofs of active/ not "gases free" petroleum tanks	Update 11: 07/2012
	Approved: Boaz Harel, Head of Safety Division	

1. General

1.1. This instruction concerns only works performed on floating roofs of petroleum tanks. Work on the access platform or on the measurement platform is permitted according to the general behavior rules of the company, as detailed in Safety Instruction 2-30-001 and electricity and control specific instructions.

1.2. This instruction is based on the instructions of the American Petroleum Institute API as published in "Safe Descent onto Floating Roofs of Tanks in Petroleum Services. Publication No. 2026, 1988 edition.

1.3. For tanks with internal floating roofs the Safety Instruction 2-30-035 is applicable

1.4. Any ascent to the tank roof must be coordinated with the control room and reported during execution.

1.5. It is absolutely forbidden to climb on the floating roof of the tank when the oil inside the tank is in movement, meaning filing/ emptying, draining and mixer operation, and 30 minutes after the mixers stopped. If the roof was standing on its

legs and was flooded, wait for 1-4 hours for the gases to be blown away before climbing on the roof.

1.6. It is mandatory to check that the tank vent is closed.

2. Safety plan

2.1. A single worker may access the floating roof of the tank for measurements, sampling an visual inspection. As long as the tank level is 2 m below the max. operational level. It is mandatory to comply with the general instructions detailed in paragraph 3 below.

2.2. If the level is lower, a single worker shall not access the roof.

2.3. For any work on the tank roof, when the roof is 2 m below the max. operational level and/ or lower, an additional worker must stand by on the access platform where he can always see the persons of the roof. This worker shall be equipped with an explosion proof, wireless communication device, and be in contact with the control room. This worker will not be otherwise employed in the execution of the work and will not access the floating roof for work but only for rescue purposes.

2.4. For the performance of any maintenance work, except maintenance works that are regular inspections, such as the inspection of the grounding cable, roof drainage, etc on the tank roof, at any height, a dedicated safety plan for execution must be prepared. The plan will be prepared by the safety manager and be attached, in writing, as an intrinsic part of the instructions for the execution of the work. 2 fire extinguishers PD-12 will be near the workers for any of the works mentioned above.

Works in which the oil surface is exposed to the environment (when the roof stands on its legs and the vents are opened, when the main seal was disassembled, (when a large quantity of fresh oil is

on the roof, etc) shall be conducted as "works in a confined space". A written rescue plan shall be prepared for those works by the safety manager. The plan will be communicated to the rescue team, control and as an annex to the work permit.
Note: Safety instruction 2-30-008 " Sandblasting for paint works in a full oil tank" is applicable for sand cleaning of the floating roof, in addition to this instruction.

2.5. No electric lighting devices (including hand torch) shall be used on the floating roof (except for an explosion proof torch for zone 0, as detailed in Safety Instruction 2-30-056)

3. General instructions

3.1. Detection of gases on the roof

3.1.1. The person descending onto the floating roof will be equipped with a combined gas concentration monitor that measures simultaneously the concentration of hydrogen sulfide (H2S), explosive and combustive gases (hydrocarbons) and oxygen in the air (O2).

3.1.2. When descending on the roof, turn the monitor on and descend slowly. If the monitor sounds an alarm regarding one of the three gases measured, leave the place immediately and make sure all the workers on the tank roof are evacuated. While workers are still on the roof, keep the monitor working until the last worker leaves the roof.

3.1.3. If work is carried out in more than one place on the roof, the workers must be equipped with more than one monitor so that all the workplaces are monitored.

3.2. Work and behavior rules

3.2.1. Work shall be scheduled as far as possible when the roof is high

3.2.2. During a lightning storm, it is forbidden to stay on the oil tank, including tank climbing ladders

3.2.3. When climbing or descending the tank stairs hold with one free hand the stair rail

3.2.4. When climbing on the tank it is mandatory to wear ant static safety boots, intact and approved for this purpose.

3.2.5. It is permitted to use an explosion proof torch when ascending and descending the tank, only on the external stairs and on the access platform (except the measuring platform) (under no circumstances on the roof!). On the roof it is permitted to use a torch suitable for Zone-0 only.

3.2.6. Limit the time of your stay on the tank roof to the time needed for performing the work.

3.2.7. Do not access the tank roof before ensuring that all mixers are off and/ or the tank vent is closed.

3.2.7.1. When the system is controlled by a programmed controller, make sure the mixers and the tank vent were switched to "unavailable" by the control computer at the control system (done by the operator in the control room)

3.2.7.2. When the system is manual, make sure the control circuits to the mixers were stopped by pushing the STOP button installed near the equipment, and that it is key-locked in this position. (the button includes a key). The tank vent must be switched to "local control" by the selection switch on the vent operator) This paragraph is not mandatory for short works, for example oil sampling, inspections, etc)

3.2.7.3. On completion of the work on the tank roof make sure the equipment is returned to the operational state.

3.2.8. Oil sampling and measurements must be carried out as defined by Safety Instruction no. 2-30-032 "Static electricity hazards during sampling and measurements at oil tanks"

3.2.9. When standing in front of a tank opening from which oil gases are likely to be released, turn your face in the direction of the wind.

3.2.10. Measurement openings and other openings of oil tanks must be closed when they are not in use.

3.2.11. Tank roofs, tank platforms, tank stairs must be kept clean of mops and oil spills remains.

Warning!! Cotton mops soaked with fuel may self ignite.

3.2.12. Remove as quick as possible oil and sludge from the tank stairs. Do not use bottles, tools, boxes and any other material on the stairs.

3.2.13. Do not clean tank platforms and other equipment that contains fuel, or equipment found near fuel with silk or synthetic material. Silk and synthetic materials accumulate static electricity and may cause ignition.

3.2.14. It is forbidden to wear clothes made of synthetic materials at work on a tank roof. When standing on the tank roof do not take off coats, shoes or perform any other activity that may cause a static electricity discharge.

Appendix D

Safety	Safety Instruction no. 2-30-005	Edition: December 1988
Page 29 of 105	Planning and managing the entry to petroleum storage tanks for cleaning and repairs	Update 4 – 7.14
	Approved: Boaz Harel Head of Safety and Environmental Protection Division	

1. General

1.1. The purpose of this instruction is to define procedures and activities required for cleaning and repair of petroleum storage tanks at the company Eilat-Ashkelon Pipeline Ltd.

1.2. This instruction adopts the original instruction:

Safe Entry and Cleaning of Petroleum Storage Tanks.
API Standard 2015. Fifth Edition May, 1994.
As published by the AMERICAN PETROLEUM INSTITUTE - API

1.3. The original instruction is written in English and was translated into Hebrew

The translation is attached and constitutes the contents of the instruction

2. Additional mandatory instructions are:

2.1. Repair of the petroleum tank bottom 2-30-006
2.2. Behavior rules for the entrance to a petroleum tank 2-30-0014
2.3. Behavior rules for the entrance to a flotation compartment 2-30-014
2.4. Precaution measures against hazardous gases and lack of oxygen in the air 2-30-019
2.5. Procedure for casualties evacuation at the company facilities 1-1-05
2.6. Measurement of gases content in the air – form

3. Recording and reporting

3.1. Complete the required details in the form "Entrance Permit to a confined area"
3.2. Prepare a safety plan as required by instruction 2015 according to paragraph 1.2 above
3.3. Make sure that the form related to the measurement of gases content in the air at predetermined times was completed
3.4. Make sure that the list of workers present in the tank, posted at the tank manhole, is always up-to –date

Note: the forms shall be printed on yellow/ orange paper
Attached:
Entrance Permit to a confined area
Measurement of gases content in the air – form

Entrance Permit to a confined area

Date	Permit no.	Work execution site
The contractor/ executor	Person in charge of the work	Emergency phone no.
Short and accurate description of the work:		

This permit is not a "hot works" permit

The measurement of gas content in the air is carried out with the device			
Manufacturer:	Model:	Serial no.:	Last calibration date:

General conditions

1. Safety program was written and is attached	Y/N	7. Rescue cart on-call	Y/N
2. Forced air supply required	Y/N	8. Inspector outside	Y/N
3. Breathing apparatus required	Y/N	9. Firefighting equipment required	Y/N
4. Full protection suit required	Y/N	10. List of persons accessing the site	Y/N
5. Impermeable protection suit required	Y/N	11. Content of gases in the air to be measured every … hours	
6. Rescue harness/ cable required	Y/N		

Detailed conditions

A detailed safety plan must be prepared as needed, according to the American Institute instructions API2015 and attached to this permit.

Approval of the person in charge of the work		Approval of the operations department	
Name	Signature	Name	Signature
Permit validity	From:		To:

Measurement of gases content in the air – form

Annex to instructions and procedures

Procedure for the execution of hot works (no. 2-2-10)

Safety instructions, planning and management of entrance to petrol tanks (2-30-005)

Safety instructions, performance of works in trenches (2-30-020)

#	Date	Hour	%LEL explosive gases	% oxygen content	H2S content ppm	Other gas if present	Checked by	Tester signature

1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Gases measurement results shall be recorded:

1. At the beginning of each work day
2. After each work break of 1 hour or more, if not otherwise required
3. Every 3 hours during work

Appendix E

Safety	Safety Instruction no. 2-30-009	Edition: April 1985
Page 32 of 105	Performance of electrical and control works on electrical or electronic equipment installed in dangerous areas (explosion proof equipment)	Update 2 – 10/2010
	Approved: Roy Friedman Company Safety Manager	Revision : 10/2010

The purpose of this procedure is to define and coordinate the performance of electrical and control works in dangerous areas by company staff teams and/ or contractors working at the EAPC facilities.

1. Definitions

1.1. Dangerous or explosive atmosphere

Means the concentration of flammable gases in the air may cause the generation of a gas/ air mixture susceptible of igniting or exploding in contact with an ignition source

1.2. Classification of oil facilities according to zones

1.2.1.Zone 0 – an especially dangerous zone.

A "dangerous atmosphere" is present in this zone continuously. For example: the internal space of oil storage tanks or "מי נטל" and piping used for the transfer of oil or "מי נטל". Drainage systems and trenches integrated into the above. Deep trenches and ditches with a temporary concentration of hydrocarbon gases on the bottom.

1.2.2.Zone 1 – "dangerous zone"

A zone where a dangerous atmosphere is likely to occur under normal operation conditions. For example: pumping housing of oil products, in the close vicinity of loading and unloading sites, near the ventilation openings of the tanks, sites where barrels or drums are filled with oil, manifolds of valves at the meters farm, etc

1.2.3.Zone 2 – "sensitive zone"

In this zone a "dangerous atmosphere" is likely to occur under unusual operation conditions as a result of technical malfunction such as: equipment malfunction, equipment breakdown due to "material fatigue". Explosion of piping seals or junctions, or of other piping fittings, pump or gasket mechanical malfunction, etc. Examples of sensitive zones: zone 2): oil tanks collection pools (except their trenches, ditches and draining openings). Zones bordering with zone 1, any site where a dangerous atmosphere is likely to occur occasionally at a limited extent and where conditions are such as to ensure a quick dispersion of the gases concentrations and any building located and opening into zone 2.

1.2.4."Limited zone"

Any site at the oil facility that is not included in the "especially dangerous", "dangerous" and "sensitive" zones is defined as "limited zone" .

2. Electrical equipment to be used in explosive atmosphere

2.1. Installation of the above equipment in classified zones

In zone 0 it is forbidden to use electrical equipment except for systems to be approved for this purpose only by an electrical engineering. In zone 1 explosion proof equipment must be used. It is also possible to use pressurized enclosure, intrinsically safe systems, oil immersed equipment and sand filled equipment. In zone 2 is permitted to use all the above mentioned equipment as well as "increased

safety" equipment and any electrical equipment that during its regular operation and functioning will not constitute an ignition source due to arcing or sparks or high surface temperature of any of its parts.

2.2. Types of protected electrical equipment (according to Israeli Standard 60079)

Electrical equipment to be used in an explosive atmosphere must be designed so as to ensure that any of its fittings will not cause an explosion in the surrounding atmosphere. Its maximum surface temperature must be indicated and it must be certified by the authorized authority for use in the given atmosphere.

2.2.1.Explosion of flame proof enclosure (usually British or American equipment)

An electrical equipment enclosure capable of withstanding internal explosion of gases or flammable vapors that are likely to penetrate inside, without being damaged and without letting the internal flame escape, through its fittings and building openings, in the direction of gases or flammable vapors found outside the envelope. The equipment selection is very important and it must be ensured that it is suitable for the given atmosphere. Equipment selected for an atmosphere of gasoline vapors is not suitable for an acetone atmosphere, for example.

2.2.2.Pressurized enclosure

(buildings and electrical rooms)
The electrical equipment enclosure prevents the penetration of flammable gases or vapors by maintaining an internal air pressure (or other non-flammable gas) that is higher than the external atmospheric pressure.

2.2.3.Intrinsically safe equipment

(usually communication, control and measurement equipment)
A circuit or part of it is considered intrinsically safe if a spark or thermal phenomenon caused during regular operation, or accidentally, are not likely, under given test conditions, to ignite given gases or vapors.

2.2.4.Increased safety

(European equipment – German or Dutch, usually)
A protection method that incorporates additional means, not usually accepted in the industry, in order to ensure increased safety under high temperatures, electric arcs and sparks not generated under regular operation.

2.2.5.Oil immersed equipment

Electrical equipment that all its components on which electric arcs are likely to occur during regular operation are immersed in oil deep enough so that ignition of any mixture that might be present above the oil is prevented, and that all its active parts, on which arcs are not likely to occur during regular operation are immersed in oil or protected by any other suitable method.

2.2.6.Sand filled equipment

Electrical equipment that all its active components are completely covered with a powdered material, so that electric arcs occurring inside the enclosure under the intended operation conditions cannot ignite the external flammable atmosphere by flame propagation, or overheating of the enclosure walls.

3. Installation and maintenance of equipment intended to be used in an explosive atmosphere

3.1. Installation of equipment in a dangerous zone

New equipment, whose structure was not approved by a qualified standards institute for installation in a dangerous zone according to the classification in paragraph 1.2, shall not be installed.
Any accessories such as cables entries, reinforcements, etc must comply with the equipment standard and shall not affect its quality or change its work conditions.

3.2. Modifications of existing equipment

No modification shall be conducted on existing equipment, if such a modification may affect the suitability of the equipment to its purpose. If the equipment purpose must be modified, the equipment must be replaced by another standard equipment.

3.3. Performance of maintenance works

3.3.1. No electrical works shall be performed on equipment in a dangerous zone, unless the equipment is disconnected from the power source.

3.3.2. Do not open an equipment cover or box in a dangerous zone, unless the equipment is disconnected from the power source.

3.3.3. Do not use regular measuring equipment in dangerous zones. If needed use intrinsically safe equipment (see 2.2.3)

3.3.4. If due to operational or technical reasons maintenance or service works must be performed on electrical equipment in a dangerous zone, and it is not possible to switch of the electric power, and regular measuring devices and tools must be used, the following measures must be taken:

3.3.4.1. Prior to the beginning of the work a "hot works" permit must be obtained from a person authorized by the facility manager or by the safety manager to issue this type of permits at the facility.

3.3.4.2. The "hot works" permit will be issued only after ensuring no hazardous atmosphere is found at the work place and in the whole area around the work place, where tools and measuring devices are used for this work

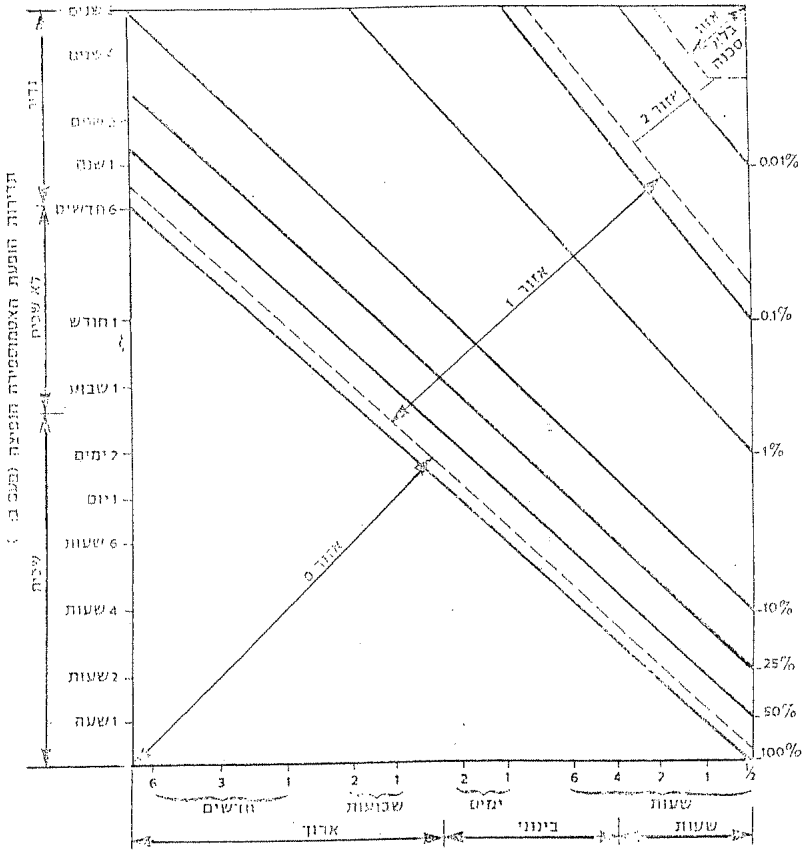
3.3.4.3. The permit issuer will check and make sure that it is not likely that a hazardous atmosphere will be created during the works.

3.3.4.4. If the work is planned for a long period of time, a continuous measuring and warning device for explosive atmospheres must be installed near the serviced equipment. The device will provide an audible warning when a dangerous situation arises, such as Warnex (EAPC catalogue no. 834 014.002.2)

3.3.4.5. The permit issuer will make sure that the control room and the fire fighters on-call were notified about the performance of this work and its location.
In addition, the permit issuer will request that measures are taken or that firefighting equipment is on call at the work site, upon his consideration and the execution conditions.

3.3.4.6. The permit issued will be recorded and documented as customary for hot works permits in the company.

שרטוט מס' 1



משך קיומה של האטמוספירה הנפיצה בעת הופעתה

חלוקת מתקני דלק לאזורים ע"פ המוגדר בתקן ישראלי 786 פרק 12.

Appendix F

1. General

1.1. This guideline is intended for defining the methods of operation and behavior for the purpose of entrance to a tank.

1.2. The methods of operation and behavior detailed below should apply to any tank with respect to which 24 hours or more have passed after its previous check.

1.3. The complex manager should appoint a responsible person who would carry out all coordination, ensure the receipt of all required approvals and supervise all operations related to the accomplishment of this guideline (hereinafter – "the supervisor").

1.4. At the end of all coordination, the entrance to the tank should be approved by the complex manager by means of his signature on the tank entrance check and coordination form.

1.5. See safety guideline 3-30-005 "Planning and management of entrance to tanks from their exit from the operation until their return to operation".

1.6. The entrance to a tank that is not "free of gases" requires a certification for the work in confined spaces.

2. Coordination and supervision

2.1. The supervisor should coordinate the entrance to a tank with the following persons:

2.1.1. Person responsible for the operation of the complex.

2.1.2. Person responsible for the maintenance of the complex.

2.1.3. Safety officer of the complex or head of the fire safety sector.

2.1.4. The coordination with all three persons is mandatory. In the absence of any of them, the coordination should be carried out with the complex manager.

2.2. The tank entrance check and coordination form is attached to this guideline. If the supervisor decides that an additional approval is necessary, such an approval should be attached to the form.

2.3. The supervisor should assure the accomplishment of inspections along the schedule established in accordance with the paragraph 6.2.7. The inspections should be recorded in the daily inspection form, Appendix B to this guideline. The inspection form should be kept on a daily basis for the whole duration of work on the tank. The work should not be started without an inspection form and an initial inspection of the tank's condition.

2.4. The supervisor should appoint one of the members of the work team entering the tank to act as an observer constantly posted outside the tank. The observer should be guided and instructed by the supervisor with respect to his personal job that includes:

2.4.1. Maintaining communication with the workers located inside the tank and with the control room and/or additional parties.

2.4.2. The observer should record or report the names of the workers located inside the tank at any particular time in order to provide the rescue team updated information for the purpose of their salvage.

2.4.3. Ensuring the accomplishment of all directions of the supervisor issued to him with respect to the people's entrance to the tank.

2.4.4. Activating the "rescue plan" (prepared by the safety officer) at a time of necessity.

2.4.5. The observer should ensure that he remains constantly within the hearing distance of the continuous detector's warning horn, and instantly upon hearing its sound he brings all the workers out of the tank.

2.4.6. In the state of failure (poisoning or fire) the observer should not enter the tank for the salvage action prior to informing the rescue team on the names and the number of people located inside the tank. It is preferable that he does not enter at all but rather awaits the rescue team and passes the details.

2.4.7. The observer should ensure that no worker enters the tank unless he is approved for entering the tank (certified for the work in confined spaces, has been instructed by the safety officer in accordance with the company's standards and approved by the safety officer).

3. The person responsible for the operation should check and coordinate as follows:

3.1. Whether the workers are indeed entering the right tank.

3.2. Whether the tank is possible to enter with respects of the fuel level, the sludge, the roof's condition, etc.

3.3. The tank's disconnection from the fuel piping by means of one of the following:

3.3.1. Dismantling all input / output faucets and installing blind flanges instead of them.

3.3.2. Installing blocking buffers between all input / output faucets and the tank.

3.3.3. The closed, sealed, disconnected and locked state of 2 faucets before the entrance / exit to the tank and opening the ventilation between 2 faucets to make sure that there is no pressure in the tank's input tube (DBB).

3.4. The secure state of all electric and control equipment connected to the tank, so that they would not hinder the entrance to the tank.

3.5. Recording in the control room's log the fact of approving the entrance to the tank: who has been approved and when, including the names of the supervisor and of the observer of the entrance to the tank and the means of communication with them.

4. The person responsible for the maintenance should check and coordinate as follows:

4.1. Whether an approval has been received from the person responsible for the operation (without such approval the coordination process should not be continued).

4.2. Accomplishment of disconnection and signage at the places and disconnection and marking at the command and control panels of all electric and control equipment of the tank (LOTO – lock-out – tag-out).

4.3. Whether the persons entering the tank are experienced in this type of work and are aware of the involved hazards.

4.4. Whether the persons entering the tank are familiar with the tank's structure including possible obstacles, for example: supports, internal tubes, the roof's eaves, drainage ditches intended for walking, mixers, etc. If necessary, such persons should be instructed on all structure details of the tank to which they are supposed to enter.

4.5. Whether floating roof legs are in the "high legs" state and are secured. If it is not the case, direction should be received from the manager of the safety and environmental protection department at the head office with regard to the required support and safety procedures.

5. The safety officer or head of the fire safety sector should check and coordinate as follows:

5.1. Whether approvals have been received from the persons responsible for the operation and maintenance for the entrance to the tank, and whether an emergency rescue plan has been prepared in accordance with the paragraph 6 below.

5.2. The safety officer, or head of the fire safety sector, should prepare all checking, artificial respiration and rescue equipment that should be in good repair, tested and ready to use prior to starting the entrance to the tank works.

5.3. The safety officer, or head of the fire safety sector, should learn the purpose of entering the tank and the checks to be carried out inside the tank, so that they would be aware of each stages of work and would know exactly at which place inside the tank are located those who have entered it at any particular time.

5.4. The safety officer, or head of the fire safety sector, should set up a schedule for checking the presence of those working inside the tank and of their health condition.

5.4.1. Continuous visual contact with those working inside the tank: The workers inside the tank should be equipped with a chemical light stick or an explosion protected lamp approved for the Type 0 areas (the lamp and its approvals should be presented to the complex safety officer), to be attached to the protective helmet and allow an easy identification.

5.4.2. Voice warning of immobility: The workers inside the tank should be equipped with a suitable warning device.

5.5. The safety officer, or head of the fire safety sector, should assure the accomplishment of the gases concentrations check and the use of safety equipment as specifies in the guideline.

5.6. The safety officer, or head of the fire safety sector, should coordinate with the radiation safety officer an inspection of the radioactive radiation intensity of the residual fuel. The check should be carried out by means of the Geiger counter. If the radiation intensity exceeds the natural environmental radiation level, the entrance to the tank should be prohibited until receiving an opinion of the Soreq Nuclear Research Center.

6. Emergency rescue plan

6.1. The safety officer (and only him), or the complex manager in the absence of the safety officer, should prepare a written emergency rescue plan in accordance with the conditions and restrictions detailed in the paragraph 7. The plan should be approved by the complex manager prior to the workers' entrance to the tank.

6.2. The rescue plan should comprise:

6.2.1. Details of the first aid and artificial respiration equipment that should be located at the work site.

6.2.2. Details of the equipment for rescuing people from inside the tank that should be carried by those entering the tank and the ways of using such equipment.

6.2.3. Details of the rescue equipment that should be in the state of readiness outside the tank for the case of emergency.

6.2.4. Details of the personnel required for the rescue that should be in the state of constant readiness outside the tank.

6.2.5. Details of the means and ways of communication between the work site and the control room.

6.2.6. Details of the rescue vehicle deployment, its location and the communication with it.

6.2.7. Details of any issue or operation in addition to those listed above, which, in the opinion of the safety officer, should be augmented, including a schedule for checking the presence of those working inside the tank (see the paragraph 5.4).

6.3. The safety officer should be responsible for the accomplishment of the rescue plan and for the implementation of the directions prepared by him in this respect.

7. Gases conditions and restrictions

7.1. Do not enter for the first time to the tank for the purpose of checking the gases content and/or for any other purpose if the tank has not yet been checked, without a compressed air breathing equipment and rescue appliances as required by the emergency rescue plan.

7.2. If the entrance to the tank is not essential and urgent, a natural ventilation of the tank should be allowed through all possible ventilation openings and/or a forced ventilation for a period of 24 to 48 hours, depending on the results of the checks as detailed below.

7.3. If the entrance to the tank is essential and urgent and no time is available for a proper ventilation, it is necessary to wait at least until the conditions become satisfactory in accordance with the paragraph 7.5, and it is absolutely forbidden to enter the tank until such conditions appear.

7.4. The entrance to the tank is forbidden if:

7.4.1. The level of explosive gases in the tank exceeds 20 % LEL.

7.4.2. The oxygen volume content in the air is below 16 %.

7.4.3. The level of gaseous hydrogen sulfide H_2S in the tank exceeds 100 ppm (particles per million).

7.5. The entrance to the tank is permitted if the breathing and rescue equipment conforms to the emergency rescue plan prepared as defined in the paragraph 6, and:

7.5.1. The level of explosive gases in the tank does not exceed 10 % LEL. If there is an urgent need to enter the tank while the LEL level is above 10 % and below 20 %, an entrance plan should be approved by the manager of the safety and environmental protection department at the head office

7.5.2. The oxygen volume content in the air is below 19.5 % but above 16 %.

7.5.3. The level of gaseous hydrogen sulfide H_2S exceeds 10 ppm but is less than 100 ppm.

7.5.4. **Attention**! Enough for just one of the checks to yield results within the dangerous range to demand the use of the breathing and rescue equipment.

7.6. The entrance to the tank is permitted without the breathing equipment if the rescue equipment conforms to the emergency rescue plan prepared as defined in the paragraph 6, and:

7.6.1. The level of explosive gases in the tank does not exceed 10 % LEL.

7.6.2. The oxygen volume content in the air is above 19.5 %.

7.6.3. The level of gaseous hydrogen sulfide H_2S is below 10 ppm.

7.6.4. **Attention**! The rescue equipment in accordance with the emergency rescue plan should be carried by a person who has entered the tank or next to him. If one of the checks to yield results outside the permitted range, one should act in accordance with the paragraph 7.4.

7.7. Checks schedule

7.7.1. Before to the first entrance to the tank.

7.7.2. Every day in the morning before entering the tank.

7.7.3. Every day after the lunch break. In the course of continuous work, every 6 hours for the whole duration of work.

7.7.4. After each absence of 2 hours and longer from the tank.

7.7.5. Each time when a rise in the gases concentration may be assumed on the basis of the work plan being carried out, for example: lifting of a large amount of sludge, rust scraping off the walls, etc.

7.7.6. These checks should be carried out in accordance with a plan that would determine in advance the check locations in accordance with the work progress. The checks results should be recorded in Appendix B (the tank entrance control form).

7.8. Continuous check of gases

7.8.1. In addition to the checks in accordance with the paragraph 7.7, a continuous check should be carried out of the gases' presence close to the work place of the team working inside the tank.

7.8.2. The team should be equipped with a combined industrial gas detector that should be placed next to the location of most of the workers and should alarm on the danger's appearance at the work place.

7.8.3. **Remember**! Such a detector samples only the area of its location. It is forbidden to rely on the results of this check with respect to the whole area of the tank without an additional inspection in accordance with the paragraph 7.7 above.

7.8.4. No work should be carried out without combined detectors in the amount sufficient for covering all the places where workers are located inside the tank. For each group of workers entering the tank, an individual detector should be provided if it is needed in the opinion of the safety officer, and the number of detectors should be recorded in the tank entrance check and coordination form (Appendix A, paragraph 4.3).

8. Entrance and operation of motorized equipment in the tank's containment system prior to completing the tank's cleaning from fuel

8.1. Do not operate in the containment system electric motors that are not explosion protected for Type 1 areas.

8.2. The entrance and operation of equipment driven by internal combustion engines to the tank's containment system should be avoided as much as possible.

8.3. Do not move an internal combustion engine closer than 15 meters from the tank's opening.

8.4. The engine should be placed windward with respect to the tank's opening.

8.5. The entrance of road tankers and vacuum trucks should be carried out in accordance with the guideline 2-30-025. All electric appliances in the truck should be shut off.

8.6. The engine should be started only upon the gases check in the engine's vicinity.

9. Electrical grounding and bridging

All equipment capable of producing static electricity should be grounded and electrically bridged to the tank. Such equipment includes road tankers, compressors and pumps.

Blowers – it should be assured that a blower is electrically bridged to the tank by means of bolts fastening it to the opening at which the blower is installed. If an electrical bridge has not been formed, the bridging should be attained by means of a cable with the cross section of at least 14 mm^2.

10. Thunderstorm and lightning

All operations at the tank should be stopped at the time of thunderstorm:

- The tank entrance permit should be cancelled.
- The workers should be removed from the tank.
- All following operations should be stopped: pumping / input of liquids / ventilation / use of road tankers for the input or output of liquids.
- All openings of the tank should be closed.

11. Reference technical material

For the purpose of entrance to the tank, all those concerned should expand the information and knowledge required for the accomplishment of this safety guideline in accordance with the issues relating to the entrance to the tank contained in the safety guideline 2-30-005 based on the safety guidelines of the American Petroleum Institute (API), publication 2015, 5^{th} edition, May 1994.

12. Appendices

12.1. Tank pre-cleaning preparation form.

12.2. Tank entrance check and coordination form.

12.3. Tank cleaning completion control form.

13. Circulation

The tank entrance check and coordination form and the tank cleaning completion control form should be sent for the information of:

13.1. Complex manager.

13.2. Head of the complex's operation department.

13.3. Head of the complex's maintenance department.

13.4. Complex safety officer.

13.5. Supervisor of entrance to the tank.

13.6. Contractor or its representative (in the case of contractor work).

13.7. Complex control room.

13.8. Manager of the safety and environmental protection department at the head office.

Tank pre-cleaning / entrance preparation form

Complex:	Tank No.:	Supervisor:	Date
Entrance purpose:			

1. Control by the head of the operation department:

1	Tank's disconnection from the fuel piping by means of:		
1.1.1	Dismantling input / output faucet / faucets and installing blind flanges instead of them.	Yes	No
1.1.2	Installing blocking buffers between input / output faucet / faucets and the tank.	Yes	No
1.1.3	2 faucets before the entrance / exit to the tank are closed, sealed, flushed and disconnected. Opening the ventilation between 2 faucets to make sure that there is no pressure in the line.	Yes	No
1.2	The fire extinguishing tube is closed and controlled.	Yes	No
1.3	Electric and control equipment is the disabled state.	Yes	No
1.4	Recording in the control room log and signage are carried out and checked.	Yes	No
1.5	Additional directions have been added as needed to the appendix.	Yes	No

Date: _____ Signature: _____

2. Control by the head of the maintenance department:

2.1	The maintenance sectors have carried out all required disconnections.	Yes	No
2.2	Electric and control equipment is disconnected, locked, tagged, marked and signed as required.	Yes	No
2.3	Coordination has been carried out with the person responsible for the accomplishment of work.	Yes	No
2.4	The workers have been instructed and are aware of the work conditions and the tank.	Yes	No
2.5	The floating roof legs are in the "high legs" state and are secured / the reinforcement has been carried out in accordance with the directions of the safety department manager.	Yes	No
2.6	Groundings at the tank have been checked.	Yes	No
2.7	The bolts of the manholes in the roof have been checked for not being blocked (released and tightened).	Yes	No
2.8	Additional directions have been added as needed to the appendix.		

Date: _____ Signature: _____

3. Control by the safety officer / Head of the fire safety sector

3.1	The emergency rescue plan has been prepared and its content attached to this form (Attach!)		
3.2	The rescue equipment has been checked and is in good repair.	Yes	No
3.3	_____ portable combined gas detectors have been issued.	Yes	No
3.4	Forced ventilation has been installed.	Yes	No
3.5	The purpose of the work in the tank and the tasks are clear and known.	Yes	No
3.6	The schedule for controlling those inside the tank has been prepared and circulated.	Yes	No
3.7	No excessive radioactive radiation has been found in the sludge.	Yes	No
1.4	Recording in the control room log and signage are carried out and checked.	Yes	No
1.5	Additional directions have been added as needed to the appendix.		
1.6	Daily control forms have been handled responsibly.		

Date: _____ Signature: _____

The complex's manager approval of the entrance to the tank:

Date: _____ Signature: _____

Appendix B Complex: _____ **Tank entrance check and coordination form**

Daily control form for the work in the tank for __ / __ / __

Tank No.: _____ Purpose of the entrance to the tank (brief):

_____

Work supervisor: First name: _____ Family name: _____

1. Name of workers approved for the entrance to the tank on this particular day:

No.	First name	Family name	From the hour ____	Till the hour ____
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

2. Concentration of the checked gases:

No.	Time	Oxygen, %	Explosive, %	H_2S, ppm	Tester name	Tester signature
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

3. The entrance is permitted * only with the breathing and rescue equipment * without the breathing and rescue equipment

* Erase the unnecessary

This approval is valid for the single day specified above.

Approval of the safety officer / head of the fire safety sector: Signature: _____ Date: _____

Appendix C

Tank cleaning completion control form

Important! This form is not a fire work permit. Fuel residues may still be present in the tank, and for any work a work permit should be obtained.

Check and mark whether there are explosive gases or fuel residues in the following areas:

No.	Checked item	
1	Tank floor area	
2	Drain ditches in the floor	
3	Tank entrance arch	
4	Tank roof area from its inner (lower) side	
5	Roof eaves	
6	Peripheral sealing	
7	Roof legs	
8	Rain drainage piping	
9	Tank roof area from its upper side	
10	Pontoons	
11	Peripheral sealing	
12	Rain drainage troughs	
13	Wall from the floor height to the roof	
14	Measuring tube from the floor height to the roof	
15	Piping inlets in the wall	
16	Additional items	

Maintenance manager (name and signature): _____

Safety officer (name and signature): _____

Appendix G

Safety	Safety Instruction no. 2-30-019	Edition: August 1992
Page 48 of 105	Precautions against hazardous gases and lack of oxygen in the air and definition of the condition "gas free"	Update 2 – 7/07
	Approved: Roy Friedman Facility Safety Manager	Revision : 2/07

1. General

1.1. This instruction is intended to clarify and expand on the subject of precautions to be taken against hazardous gases and lack of oxygen in the air in general.

For the performance of defined works please see the safety instructions related to each and every task.

1.2. Works during which there is a potential risk of injury due to hazardous gases are:

Works on the roof of a full petroleum tank	–	see instruction 2-30-002
Cleaning of petroleum storage tanks	–	see instruction 2-30-005
Repair of the petroleum tank bottom	–	see instruction 2-30-007
Entrance to a petroleum tank	–	see instruction 2-30-012
Entrance and work in a flotation compartment	–	see instruction 2-30-014
Works in trenches, pits, etc	–	see instruction 2-30-020
Entrance and work in a security inspection pit	–	see instruction 2-30-043

1.3. The works detailed in paragraph 1.2 above do not cover all the works and activities performed at the facility. For any work to be performed the risks due to the presence of gases must be considered and the precautions to be taken in each case must be integrated as an intrinsic part of the work specifications design.

1.4. The presence of hazardous gases and oxygen depletion shall be measured with a suitable monitor. The list of the equipment to be used for detecting hazardous gases and lack of oxygen, according to the standard is included in instruction 2-30-015.

1.5. The "gas free" condition of a work site is defined in paragraph 3.1 below.

2. Hazardous gases

The most common hazardous gases present at an oil facility during regular works are: hydrocarbon gases, liquefied petroleum gas, hydrogen sulfide and lack of oxygen in the air. During special works such as at the laboratory, etc act as required in each case.

2.1. Hydrocarbon gases and liquefied petroleum gas

2.1.1. Hydrocarbon gases and liquefied petroleum gas are dangerous due to ignition and explosion. Therefore, prior to the performance of hot works on the facility premises, a hot work permit must be obtained according to all the procedures and rules in force.

2.1.2. In addition, hydrocarbon gases and liquefied petroleum gas affect the individuals and cause headache and eye irritation and a drunk-like feeling that impairs judgment with all the risks involved.

2.1.3. The characteristic smell of hydrocarbon gases changes according to the fuel type and its composition, and sometimes, high concentrations is high might deaden the sense of smell. A lack of smell does not imply gas absence. The gas presence must be measured

with suitable monitors. Remember that since some of those gases are heavier than air, they must be checked at the bottom of ditches, pits, trenches and confined spaces. Imported liquefied petroleum gas has no odor ; a strong and pungent odor of ethyl mercaptan is added during the acceptance process.

Characteristic places will be detailed later

2.2. Hydrogen sulfide (H_2S)

2.2.1. Hydrogen sulfide is a very dangerous and toxic gas. It is present in several types of crude oils in various concentrations. It is also present in the sedimentation waters of crude oil and it might be released into the work environment during activities performed on the oil system.

2.2.2. Hydrogen sulfide is characterized by a strong odor of "rotten eggs" when it is present in low concentrations in the work environment, but even a relative low concentration of the gas may completely deaden the sense of smell. It is mandatory to use monitoring devices when starting to work in an area where hydrogen sulfide may be present. The gas is heavier than air and will accumulate on the bottom of pits, ditches, trenches, etc. Characteristic places will be detailed later.

2.2.3. Gases have severe and even deadly influence on the human body, starting with unconsciousness and ending in death. Therefore it is forbidden to take risks when working at sites where hydrogen sulfide may be released into the work environment or where it presence is clearly expected (such as entrance to a tank full of oil sediments). It is mandatory to wear and use breathing equipment.

2.3. Lack of oxygen in the air

2.3.1. It is not possible to detect lack of oxygen in the air. The results resemble those encountered on a high mountain and are characterized by breathing difficulty and a sudden fatigue sensation.

2.3.2. Lack of oxygen in the air may be caused by several factors such as: the presence of a large amount of another gas, oxygen consumption by another activity such as drying a large amount of paint, a combustion engine working in a confined space, etc

2.3.3. Lack of oxygen in the air is usually expected in confined spaces without sufficient ventilation openings. This situation may also be tested by the company monitors.

3. Conditions and permitted limits for work performance

3.1. Permitted conditions for performing the work: this situation is defined "gas free"

3.1.1. The content of explosive gases in the air is less than LEL = 10%

3.1.2. The oxygen content in the air is above 19.5% by volume

3.1.3. The content of hydrogen sulfide is less than 10 ppm by volume

3.2. It is forbidden to work at this site if:

3.2.1. The level of explosive gases is above LEL = 20%

3.2.2. The oxygen content in the air is less than 16% by volume

3.2.3. The content of hydrogen sulfide is above than 100 ppm by volume

3.3. Under conditions that are different from those mentioned in paragraph 3.1 and within a rage that is below the range mentioned in paragraph 3.2, protection, safety and escape means must be planned for each work type according to the expected performance conditions.

4. Characteristic hazardous places

Hazardous places shall be divided into two categories according to the expected presence of the gases under different conditions.

4.1. Gases may be present during a regular and correct operation of the system

4.1.1. In a tank full of oil sediments, between the roof and the floor

4.1.2. Separation area water/ oil Ashkelon

4.1.3. Separation area water/ oil Eilat – beach

4.1.4. Pooling area of sedimentation waters Ashkelon "Shacham Pools")

4.1.5. Pooling area of sedimentation waters Eilat – beach (near the water pool)

4.1.6. On the floating roof of a "low" oil tank

4.1.7. Near every drainage funnel or sampling opening when it is opened for sampling water or sediments.

4.1.8. Inside any trench that passes through the area of the tanks farm, pumping station, and continues outside the area (in particular manholes of communication and electricity cables pipelines)

4.1.9. Near water/ oil separator in the tank dishes at Ramat Yotam and Ashkelon

4.1.10. At the liquefied petroleum gas Ashkelon

4.2. The gases may be found as a result of a planned activity or a malfunction

4.2.1. Disassembly or opening of a valve, pump, "אגן עיוור" on the line, tank manhole, etc

4.2.2. In areas of oil pooling or accumulation as a result of pipeline explosion, planned draining, etc, especially during the pool pumping in places where vortexes are created or feeding into a collection tank.

4.2.3. In areas of pooling or accumulation of sedimentation waters of crude oil, as a result of tank drainage after "roof flooding", line flushing, line or facility filling with water for welding, etc

4.2.4. Inside each pit or trench in the area of a fuel facility, or next to a fuel line, including the area of the embankment that surrounds the tanks, the area of the embankment that surrounds Power station 2 Eilat- beach, the manifold trench Ramat Yotam, etc.

4.3. The above list is not "תורה מסיני" and if the safety manager, or the work manger consider that a gas hazard is expected in the area that is not included in the above list, the issue must be examined and addressed accordingly.

5. Preventive actions

5.1. For any work planned to be executed on the facility premises or in the lines area, the possibility of hazardous gases presence at the work site must be examined, in addition to all the safety measures taken, hot work instructions, etc. Whenever there is a concern that toxic gases might be present, no access to the work site should be permitted until the site is tested with a suitable monitor.

5.2. If the test detects the presence of gases at the work site, the place must be properly ventilated for a sufficient period of time in order to remove the hazard. If needed, air may be pumped in by a compressor, a Venturi device, a blower, etc.; the entrance to the site for the execution of the work is permitted only after the removal of the toxic gases and checking.

5.3. For works where an atmosphere with a high concentration of toxic or flammable gases is expected, the execution must be planned ahead and the work planning must include a detailed rescue plan, rescue means and escape routes as an intrinsic part of the work specifications. The work planner is responsible for the preparation and the execution. The plan must be approved by the facility manager. The work manager or the safety manager shall not permit the execution of work in an area where the accumulation of gases is expected, without an approved rescue plan.

5.4. Hydrogen sulfide (H_2S) is present as well in the sedimentation waters of the crude oil. It must be mentioned that in this media, the hydrogen sulfide solution in water may be neutralized by spreading "burnt lime" (calcium oxide) in the water. The procedure cannot be performed in the oil. It must be emphasized that burnt lime is by itself a hazardous material that causes irritation of skin and eyes and it must be used with caution.

Appendix H

Field: Safety	Safety Directive No. 2-30-020	Edition: August 1992
Page 52 of 105	Execution of excavation works and works in ditches, trenches, shafts, pits and storage places in fuel installations	Update 3: 01.13
	Approved by: Boaz Harel , Safety and Environmental Protection Department Director	

1. General

1.1 This safety directive does not replace the safety directives specified in the Work Safety Regulations (Construction Works) 5745-1988, Chapter 9: "Excavations and Earthworks", but constitutes an addition and complement to the said directive, the contents of which are attached as an appendix to this directive.

1.2 Work in fuel installations obligates additional activities that are not specified in the Safety Regulations and that derive from special conditions because of additional risks as specified below.

1.3 This directive encompasses any work involved in execution of excavation, in entry to any pit, shaft, ditch, trench or installation underground, under the environmental surface, or where it is feared that there may be a place for concentration of residues, fuel, gases, etc., even if the installation has existed already for many years, the trench is not new or the pit serves for operation or installation of existing equipment.

1.4 For any work to be carried out at the sites of the Eilat Ashkelon Pipeline Company Ltd. in matters relating to this safety directive a responsible employee will be appointed.

1.4.1 For work carried out by the company employees (or a contractor on a daily rate basis employed by work order), the system director will appoint an employee responsible for execution of the work where:

a) The responsible employee will be well-versed in all details of the work to be executed in all its stages.

b) The responsible employee will be trained by the system maintenance director or the pipeline unit director and will be aware of all the risks involved in execution of the work with which he is charged.

c) The responsible employee will be well-versed in all the safety directives that concern execution of the work with which he is charged.

1.4.2 For the work carried out by a contractor according to a work contract, the system director/pipeline unit director will verify that the contractor meets all the safety requirements as specified in the general contract terms and each clause or appendix in the matter attached to the contract, and this includes:

a) Appointment of a duly qualified foreman.

b) Training of the foreman and the contractor's employees as required in Safety Directive 2-30-021.

1.5 In addition to this directive he must carefully read Safety Directive No. 2-30-019 "Precautions against Hazardous Gases" and act accordingly.

1.6 Before starting work he must fill out the "Entry permit to a confined space" form attached in appendix to this directive. If necessary, a safety plan in writing will be drawn up for further details of the work.

1.7 Before start of the excavation works, he must fill out an "Excavation works permit" form as specified in appendix (details will be given of underground infrastructures, injury prevention measures in underground infrastructures, measures to prevent cave-in, fencing, signposting and marking of the excavation, escape means from the excavation and any additional safety measures that must be adopted). A copy of the "Excavation works permit" form will be distributed for command/dispatch.

2. Special risks

2.1 Pooling of toxic and/or flammable gases

2.1.1 Flammable gases

a. Crude oil contains flammable gases that evaporate from it in various conditions. The higher the ambient temperature, the greater is the risk of creation of gases. A detector must be used that constantly samples the environment for the existence of flammable and toxic gases and oxygen deficiency.

b. The flammable gases are heavier than air and will be concentrated at the bottom of the trench. If there is a large quantity of gases, the entire trench may be full of gases and then, in addition to the risk of combustion, a risk of suffocation from lack of air to breathe is added.

2.1.2 Toxic gases:

a. Certain types of crude oil contain a toxic gas of hydrogen sulfide type (H_2S). This gas is diluted in the fuel and/or in residual fuel and in water drained from tanks or pipes that contained fuel.

b. This gas has a characteristic pungent odor ("rotten eggs"), as long as it is diluted in the air in a low concentration. Where the hydrogen sulfide content is high in the ambient air volume, a person's sense of smell will no longer protect him, and in a very low concentration it is already harmful. **Therefore, it is absolutely forbidden to rely on sense of smell to identify this gas,** even for an employee who is the most experienced person in work in fuel installations. The presence of this gas must be checked by an appropriate detector.

2.2 Pooling of liquids

In every place in this directive where the word "trench" is written, this means also pit/ditch/shaft/place of fuel storage.

2.2.1 Pooling of liquids in a trench is liable to lead to 3 risks that must be taken into consideration.

a. Slipping and falling and risk of drowning in the liquid.

b. Undermining of the excavation walls and risk of cave-in. Therefore liquids that have pooled in a trench must be pumped and removed, whether oil, water, or residues, before start of the work in the trench.

c. The pooling and pumping process is liable to change the environmental conditions in or next to the trench, and whirlpools of the pumped liquid may give rise to forming of gases that did not exist in the locality before start of the pumping. Therefore, measurement of the gas content must be carried out frequently during pumping of the residues and there must be continuous measurement of gases before and during entry to the trench.

2.2.2 This directive also relates to collection of fuel and residual fuel performed deliberately for purposes of draining a pipeline, tank, pump or other equipment for repair, maintenance or as a result of a fault or leak. Even if the locality in appearance seems to be an "open surface" in every way, the very fact of forming of the pooling changes the conditions and requires strict implementation as specified above.

3. Conditions and restrictions

3.1 It is absolutely forbidden to go into a trench or to approach the fuel or residual fuel collection tank unless the following conditions are fulfilled:

3.1.1 The level of explosive gases is less than LEL = 10%.

3.1.2 The oxygen level in the air is greater than 19.5% in volume.

3.1.3 The hydrogen sulfide (H_2S) content is less than 10 particles per million (10 PPM).

3.2 The inspection will be carried out by an appropriate detector equipped with suction pipes for pumping environmental samples from the trench, or by lowering the detector attached to a strap into the trench. It is forbidden to go down into the trench before testing by the detector.

3.3 If employees are already working in the trench, and it is necessary in the work process to open a valve, connection or basin, connected to an active or full fuel installation and that is liable to send gases or fluids into the trench and to change the conditions inspected before this stage, the following actions must be taken:

3.3.1 A minimal team of employees will remain in the trench to perform the task.

3.3.2 The team will be equipped with a combined detector for monitoring of gases, which will issue an audiovisual alarm if hazardous gases are formed in the trench, and respiratory equipment, according to the rescue plan (see 3.3.5).

3.3.3 The employees in the trench will wear a rescue harness to which will be attached ropes or cables strong enough for rescue to be carried out. The ends of the ropes will be tied outside

the trench to a strong and fixed anchoring point or to a stake installed specifically for this purpose.

3.3.4 Outside the trench there will be enough people equipped with appropriate rescue equipment in order to rescue the workers from the trench. The type and amount of equipment required for rescue will be determined in each work according to the nature of the work executed. The workers outside the trench will be in constant eye contact with those inside the trench.

3.3.5 The rescue plan will be drawn up in advance by the foreman and approved by the safety officer or the system director.

4. Recording and monitoring

In the gas contents in the air inspection form the results of the tests must be entered, according to the times indicated in the form (to be printed on yellow/orange paper).

Encl.:

Entry permit to a confined space form.

Gas contents in the air recording form.

Appendix to Safety Directive No. 2-30-020

Safety at Work Regulations (Building Works)
5741 - 1988

Chapter 9: Excavations and Earthworks

111. Prevention of cave-in

a) Excavation or filling work will be carried out in such a way as to prevent injury to the employee.

b) A constructing party is responsible for ensuring that they do not begin or continue execution of an excavation that might reduce the stability of a building, installation or part thereof, whether fixed or temporary, unless appropriate measures were taken to prevent injury to persons, both before the start of and during the excavation. Reduction of the stability - there is no difference between whether cave-in of the excavation is a result of the actual fact of the excavation or of any external factor. The object of the regulations is to prevent cave-in of the excavation at its digging stage or after it was dug, but not at the stage of removal of the shoring.

112. Sides of an excavation or backfill

a) Sides of an excavation or backfill, except for an excavation or backfill according to the natural slope of the ground where there is no risk of cave-in, and where their depth or height does not exceed 1.20 m, will be secured against cave-in by appropriate shoring made of wood, metal, or other material with appropriate strength, by a system of scaffolds or by piles. The correct interpretation of this regulation is that the trench must be supported, if its depth below the ground is greater than 1.20 m, unless it was dug entirely in a natural slope. The constructing party is not exempt from the obligation of shoring a trench with the top part dug according to natural sloping of the ground, and dug subsequently with steep walls. Will be secured - "A constructing party who claims that the regulation provisions do not have to be applied by him, even though the excavation is at a depth exceeding 1.20 m etc., must prove that the excavation is being dug according to the natural slope of the ground".

b) It is forbidden to bring any vehicle, excavator, bulldozer, tractor or other engineering equipment etc. to the edge of the excavation, to the point of undermining the stability of the sides of the excavation or the shoring, unless measures were taken to prevent the cave-in.

c) Matter or soil, as the case may be, that was removed during excavation, will be kept at a distance, guaranteeing against cave-in: the distance will be no less than 50 cm from the wall or edge of the excavation.

d) The shoring of an excavation of a depth exceeding 4 m will be effected according to a plan. The shoring plan as aforesaid will be at the site next to the general log throughout the time of execution of excavation work.

e) If at the time of installation of shoring there is a risk of danger to the worker because of cave-in, he will lower into the pit, the excavation or the trench a trench shield that will acquire for the worker in it the measure of safety required until completion of the work.

f) Instead of shoring as aforesaid in subregulation (a), an appropriate trench shield can be used.

113. Excavation by machine

The obligation of installing shoring or the obligation of taking other measures to prevent cave-in of walls does not apply to excavation carried out by machine that does not require a human presence in the excavation.

114. Special precautions:

a) Before start of execution of excavation or hewing works, the constructing party will check for the possible existence of electricity, water, sewage, telephone, gas lines, etc., and will start excavation or hewing as aforesaid only after taking special precautions to prevent injury to workers or damage to installations.

b) The foreman will take special precautions to prevent injury to a person in the excavation or pit from electricity current, harmful fumes, gases or rush of water.

c) For purposes of execution of work at night or in a dark place, appropriate lighting will be installed in the place of work, and in the nearby passages.

d) Next to each excavation or pit where there is danger of falling into them, lamps with red light will be installed.

115. Fencing of pit, excavation or slope

a) A pit, excavation, hewn wall or slope into which a person might fall or might fall along their edges from a vertical height exceeding 2 m will be fenced as close as possible to the edge, with appropriate grab-handle and mid-rail, as specified in Regulation 10, with appropriate strength to prevent falling as aforesaid. As close as possible - these words relate not to the actual obligation, but to the distance of the fence from the edge of the pit. The last paragraph of the regulation "shows that the legislator intended to impose an absolute obligation of fencing, but at the same time he evaluated its gravity and the difficulties that it was liable to create, and therefore he delimited its boundaries and determined the cases in which it is permitted to make an opening in it, and the size of the opening."

b) A grab-handle and a mid-rail that were installed as aforesaid will be in serviceable condition for as long as the excavation, pit, slope or hewn wall exist, but it is permitted to temporarily remove them if necessary in order to allow passage of material, and this for the period required for this activity only, with taking of the required measures to prevent a person or materials falling in.

c) In construction engineering, if in the circumstances in question it is not practical to install a grab-handle and a mid-rail, as required in subregulation (a), other suitable measures will be adopted to prevent a person falling into the excavation, pit, hewn wall or slope.

116. Workplace safety in drilling for piles

A man will not enter and will not be employed in a hole for a pile.

117. Going up and down

a) Going down into and up out of a pit or excavation with a depth exceeding 1.20 m will be by a way where the sloping does not exceed a ratio of 1 vertical to 1.5 horizontal. However, it is permitted to install suitable steps or a ladder.

b) The distance between the place where the worker is in the trench or in the excavation and the egress from them will not exceed 20 m.

118. Width of trenches

The trench which according to these regulations requires shoring will be wide enough to allow installation of appropriate shoring and execution of the work for which the trench was dug in a proper and safe way.

119. Trenches in sandy soil

a) The walls of a trench in sandy soil (in this regulation - sandy trench), will be installed standing and next to each other, will cover the area of the sandy trench sides to its full depth, will penetrate to a sufficient depth beneath its bottom and will protrude 15 cm at least above the adjacent ground.

b) The walls on both sides of a sandy trench will be supported by horizontal supports along its entire length, at depths and with appropriate intervals between them, as required.

c) The supports will be installed on both sides of the sandy trench opposite each other and will be strengthened with reinforcements at appropriate intervals from each other, as necessary.

d) The reinforcements will be secured from accidental moving from their place and they will also be secured -

(1) If they are wooden reinforcements - with cleats that will be connected to the reinforcements and to the supports even if wedges are used for their reinforcement:

(2) If they are screwed metal reinforcements - with an arrangement appropriate to prevent them from falling. Nothing will be placed on the reinforcements and nothing will lean against them that might endanger the stability or cause them to move.

120. Passages over trenches

a) Over every trench with a width exceeding 60 cm said passages will be installed and of a sufficient number according to the work needs.

121. Unstable or protruding material

a) Hewing of a wall will be carried out so that no protruding or unstable material is formed that could endanger the workers engaged in hewing, near or passing by the wall.

b) If protruding or unstable material is formed as aforesaid, it will be removed immediately and by a safe method.

122. Control

a) The foreman will carry out safety control of an excavation, backfill, hewing or shoring at each of the following times:

(1) Every day before start of the work;

(2) After interruption of work for seven days and before it is resumed;

(3) After interruption of work because of rain or flooding and before it is resumed;

b) The foreman will record the inspection results in the general log.

123. Work on slope

When work is executed on or near a slope, and in the course of it or as a result of it rocks or other matter might fall, appropriate methods of work and tools will be used and

suitable measures will be taken to prevent injury from rocks, stones or matter as aforesaid to persons or property.

124. Stability of a hewn wall

A constructing party is responsible for ensuring that hewing of a wall will be planned and executed so that its stability will be guaranteed by stable sloping or by taking other appropriate measures to achieve the same aim.

125. Inspection of hewn wall and removal of protruding or unstable material

The foreman will inspect daily, before start of the work, the stability of the hewn wall;

If protruding or unstable matter is found in the inspection it will be removed safely.

126. Prohibition of human presence

A man will not be required to be, pass or work in a place where he is liable to be injured from unstable matter or an unstable wall.

Gas contents in the air inspection form
Appendix to directives and procedures
Execution of Works with Fire Risks Procedure (No. 2-2-10)
Safety, Planning and Managing Entrance to Fuel Tanks Directive (No. 2-30-005)
Safety, Execution of Works in Trenches Directive (No. 2-30-020)

Serial No.	**Date**	**Time**	**Explosive Gases LEL %**	**Oxygen Content %**	**H_2S ppm content**	**Other gas if present**	**Name of inspector**	**Signature of inspector**
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Recording times of gas inspection results are:

1. At the start of every working day.
2. After every interruption of work of 1 hour or more.
3. Every three hours in the course of the work.

Entry permit to a confined space

Date	Permit No.	Place of execution of the work
The contractor/person carrying out the work	Person responsible for the work	Emergency telephone number
Short and precise description of the work:		

This permit does not constitute permission for work with fire risks

Gas contents in the air inspection performed with an instrument			
Manufacturer:	Model:	Serial No.:	Last calibration date:

General conditions			
1. Safety program was written and is attached	Yes/no	7. Rescue trolley is ready	Yes/no
2. Compressed air supply required	Yes/no	8. Outside inspector	Yes/no
3. Respiratory apparatus (SCBA) required	Yes/no	9. Fire extinguishing equipment required	Yes/no
4. Full protective clothing required	Yes/no	10. List of persons entering the locality	Yes/no
5. Impermeable protective suit required	Yes/no	11. Inspection of gas in the air content will be carried out every ..... hours	
6. Rescue harness/rope required	Yes/no		

Detailed conditions

A detailed safety program must be drawn up as required according to the directives of the American Petroleum Institute (API) 2015 and attached to this permit.

Operating Department Approval		Approval of person responsible for the work	
Name:	Signature:	Name:	Signature:
Validity of the permit:	From:		To:

Excavation permit

This permit does not constitute permission for works with risk

Date:	Permit No.:	Person responsible for the work:
The contractor/person carrying out the work:		
Description of the excavation (its purpose, location, depth, width, length):		

Underground infrastructures:

Description of underground infrastructures traversed by the excavation (fuel, gas, water, sewage pipelines, electricity and communications cables):
Specify means for detection, identification and marking of underground infrastructures (as-built plans, marking in the field, use of underground pipe and cable detectors, exploratory excavations - specify instructions for exploratory excavations: manual excavations/small mechanical engineering equipment/plastic trowel/excavation in water/observer/ removal of teeth/other):
Specify precautions for excavation in proximity of infrastructures (manual excavations/small mechanical engineering equipment/plastic trowel/excavation with water/observer/ removal of teeth/other/disconnection of electricity/emptying or lowering pressure in pipeline):

Additional Safety Directives for Execution of the Excavation	
Marking route of the excavation in lime before starting the excavation and approval of the inspector (yes/no)	5. Fencing, signposting and marking of the excavation. Night marking (blinkers):

Means to prevent cave-in (shoring/natural slope/other):	Escape openings from the excavation and distance between each opening (slope/ladder/other):
Prevention of collapse of nearby building:	

Other measures (attach appendix):

Maintenance Department Director (name, signature):
_____

Safety Officer (name, signature): _____

Person responsible for excavation (name, signature):
_____

Appendix I

Safety	Safety Instruction no. 2-30-021	Edition: September 1992
Page 64 of 105	Safety procedures training of contractors' staff	Revision 9: 05.13
	Approved: Boaz Harel Head of Maintenance and Environmental Protection Division	

1. General

1.1. The heads of Eilat and Askelon facilities, the head of the line maintenance unit and the head of the operations division are responsible for the implementation of this instruction (hereinafter the manager)

1.2. According to this instruction, training will be provided to contractors employees intended to entry the facilities premises or the area of the lines strip in order to carry out works at the oil facilities or in their vicinity (hereinafter: work performance)

1.3. According to this instruction, training will be provided as well to permanent service providers at the facilities and at the line maintenance unit.

1.4. For the actual performance of the training, the manager will appoint a suitable worker, skilled and familiar with all the safety instructions of the company EAPC, and the safety regulations of the Labor and Welfare Ministry, and familiar with the specifications of the work to be performed and the risks involved (hereinafter: the trainer).

1.5. Training will be conducted in three steps:

1.5.1. Contractor or/and its representative, work manager and/ or team leaders, will receive a detailed explanation on the risks involved in the performance of the work and on the safety measures to be taken by them.

1.5.2. All the contractor's workers will receive general training on the subjects related to their work and the risks involved in the performance of the work, as well as explanations concerning the behavior at the company facilities.

1.5.3. The Contractor, his representative, or work manager on his behalf, will provide training to their workers concerning the special safety instructions for the performance of this work. Those instructions will be provided by the contractor to EAPC on the date of the signature on the execution contract.

1.6. The manager is responsible to ensure that under no circumstances shall the contractor start working prior to receiving training according to this instruction.

2. Execution

2.1. The trainer will ensure that the specifications of the work to be performed are clear and known to him, and if necessary, will contact the facility engineer for a detailed explanation of the work process.

2.2. The trainer will examine, together with the facility engineer, the expected risks involved in the performance of the work according to the execution specifications.

2.3. The trainer will check and coordinate with the operation manager the operation aspects that might have impact of the workers safety during the performance of the said work, or the impact of the work on the operation safety.

2.4. As far as possible, the trainer will prepare in advance main points to be discussed during the training sessions he intends to provide, and submit them to the approval of the manager prior to the training.

2.5. The trainer will provide to each trained worker a copy of the Safety Instruction 2-30-000 "Basic Rules for Safety at Work at EPAC facilities" and will record on the registration form.

2.6. The contractor, his representative, or work manager on his behalf will provide to each worker trained by him a copy of the special safety instructions as delivered by him and that constitute an intrinsic part of the contract for the execution of the works.

2.7. The contractor , his representative, or work manager on his behalf, will train his workers and will emphasize the specific risks they might be exposed to during the work.

2.8. The trainer will record the attendance at the training concerning the EAPC safety procedures and the contractor's safety procedures, and will get the signatures of the trainees, the contractor and/ or his representative, and/or work manager on his behalf on the list of names of the trained workers according to the form attached to this instruction.

2.9. The trainer will inform the contractor that every new worker that started working on site after the training was performed, must receive safety training according to this safety instruction, and that he must not be allowed to work on sire without training.

2.10. The list of participants at the training will constitute the list of persons authorized to enter the facility. The security officer will ensure that persons not included in the list will not enter the facility, unless they received a special entrance authorization from the facility manager.

2.11. The list of participants at the training will not provide authorized entrance to the site to persons included in it without the approval of the security officer of the facility for works conducted on the facility premises (Eilat including Paran and Yodfata, Ashkelon including Ashdod and Gelilot).

2.12. An authorization issued by the national safety manager of the company is required for works performed along the oil pipelines, to be received in advance, prior to the beginning of the works and the training.

2.13. Training and entrance of contractor's service providers

2.13.1. As early as possible, the work manger will communicate to the work inspector on the company behalf (hereinafter: the inspector) the details of the service provider (service type, names of the service providers, expected arrival date and time, time of stay on the premises and any other relevant details)

2.13.2. The inspector will send the details in paragraph 2.13.1 to the trainer and the security officer.

2.13.3. The work manager will provide training to the service provider according to paragraphs 2.8 – 2.5. The trainer will decide if additional training is needed according to the service type.

2.13.4. The work manager will accompany closely the service provider, for his entry to the facility and until his departure. The work manager will ensure that the service provider acts according to the safety instructions accepted at the company, during the whole period of his stay at the facility.

3. Recording and reporting

3.1. The trainer will report the completion of the training to the manager, the safety manager/ safety trustee, the work inspector and the security officer.

3.2. A copy of the registration form of the safety training for the contractor and his workers will be sent by the trainer for follow-up and reporting:

3.2.1. To the inspector of the contractor work for filling in the work file

3.2.2. To the safety manager/ safety trustee of the facility/ pipelined unit

3.2.3. To the security officer of the facility for follow-up of the entrance at the facility gate.

3.3. The trainer will ensure that the following are kept in the training logbook:

3.3.1. A copy of the safety instructions for the performance of the works, explained by the trainer to the contractor workers.

3.3.2. A copy of the special safety instructions explained by the contractor to his workers

3.3.3. A copy of the registration form of the contractor workers that received safety procedures training, dully signed.

4. Accompanying instruction:

2-30-000 "Basic Rules for Safety at Work at EPAC facilities"

Registration form of the contractor workers that received safety procedures training

Contract/ work order no.: ……
Work purpose and its location: ……
The contractor: ……
Name of the contractor representative or the work manager in charge: …… ID no.: ……
The name of EAPC trainer: ……

Worker declaration

I hereby declare that a received training on safety issues, as provided by the EAPC company representative and the contractor representative. I have read the safety procedures at work concerning my work and they are clear to me and I agree with them.
I am aware of the risks involved in the work I must perform and I undertake to use all the required equipment in order to prevent any injury that might be caused to me, or to other persons, or to equipment and property on the site and in its vicinity, and to take all the required measures in order to carry out my work in a safe way.
I am aware of the fact that the contractor by whom I am employed assumed the obligation, towards EAPC, to take responsibility for any bodily or material damage caused to me or a third party, during the performance of my work or as a result of it.
I am aware of the fact that EAPC is not responsible to compensate me for any damage that might be caused to me and/ or to one of my representatives and/ or to property during my work and/ or as a result of it.
This form, after being approved by the trainer, the contractor representative and the security officer, will constitute the list of the names of the persons authorized to enter the work site. The form is not valid for work at the oil pipelines.

No.	Last name	First name	ID. No.	Mobile phone no.	2-30-000 given	Signature

Name and signature of contractor representative

Signature of the facility security officer (not valid for work at the oil pipelines)

Trainer' s name and signature

To: Eilat- Ashkelon Pipeline Ltd
From: ……

Annex to contract: _____

Work object: _____

Certification of compliance with safety requirements

I hereby certify that during my work at the company Eilat- Ashkelon Pipeline Ltd, according to the above mentioned contract:

1) All the safety regulations provided by law in the State of Israel are known to me and I comply with them.
2) I am aware of the fact that I work at an oil facility where additional mandatory safety instructions are in force. I undertake to work accordingly and to comply with the instructions given by the facility safety manager or his representative at the work site.
3) I know that according to the Safety at Work Directive I am obliged to report to the regional work inspector the details set forth in the directive, within one week from the date of the beginning of the work at the site.
4) The engineering mechanical equipment operated by me at the Eilat- Ashkelon Pipeline Ltd company site meets all the safety requirements according to any law. The equipment was inspected by a certified inspector on the behalf of the Labor Ministry and passed the inspection.
5) All the workers employed by me at the Eilat- Ashkelon Pipeline Ltd company site for works that require periodical medical check-ups were checked-up as required by the relevant regulations and they are qualified to perform the work as required.
6) The work manager for this contract, as required by the safety instruction is: …….. ID ….

Address:
……
Date: ……. Contractor's signature and stamp

Special safety instructions for the contract/ work order

Contract/ work order no.: ……
Work purpose and its location: ……
The contractor: ……
Name of the contractor representative or the work manager in charge: …… ID no.: ……

Instructions details

1) ……..
2) ……
3) ……..
4) ……..
5) ……..
6) ……..
7) ……..
8) ……..
9) ……
10) ……

Date: ……. Name: …… Signature: ……..

1. Background

As part of the works carried out in the company, use is made of various types of cranes (mobile, self loading, bridge), lifting machines, lifting accessories, man baskets and lifting platforms. The use is carried out either by the company's workers or by contractors and service providers performing various works for the company, as well as by suppliers loading and unloading goods at the company's facilities. Safety regulations and safety rules exist for such works, for example, on the issues of training and certification of the crane and lifting machinery operators, of periodical inspections by certified inspectors of the cranes', lifting machines' and lifting accessories' good repair and of the safety rules.\

Principal hazards:

- Fall of load as a result of:
  - Fault of the lifting accessory, crane, lifting machine, anchoring points or the load fastening.
  - The load weight not suitable for the lifting accessory, crane or lifting machine.
  - Insecure load fastening and harnessing.
  - Sharp jerks while moving the load.
- Worker's crushing as a result of the load's fall or movement.
- Lashing by cable, chain or torn sling.
- Rollover from crane / lift truck.

2. Purpose

To establish a method of assuring a safe operation and compliance with the requirements of the safety regulations in the course of operating the cranes, lifting machines, man baskets and lifting platforms.

3. Method

Prior to carrying out a work, it is necessary to ensure the compliance with the safety requirements in accordance with the checklist as detailed in the appendices.

3.1. Every operation of a crane or lifting machine should be only carried out by an operator holding a valid qualification certificate.

3.2. Each crane, lift truck, lifting machine and lifting accessory should have a valid safety report signed by an inspector certified by the Ministry of Economy, Trade and Employment. **A crane without a valid safety report should not be allowed to enter the company premises**.

3.3. Each crane, lifting machine and lifting accessory should be inspected visually in order to assure its integrity and good repair (particular attention should be paid to the good repair of lifting slings).

3.4. Operators of mechanically, electrically, hydraulically or pneumatically powered lifting machines (except cranes) should undergo the company's internal training and qualification. Such training should include the machine's safety vulnerabilities, operation instructions and safety instructions. The instructor should assure that the worker has understood the instructions. The lifting machine operator's appointment form should be signed by the instructor and the worker and added to the worker's personal file (see the appendix).

3.5. The service / merchandize buyer on behalf of the company should assure the conveyance of this guideline to the service provider or to those loading / unloading the merchandize and assure the guideline's accomplishment.

3.6. In contractor works, the contractor's foreman should be responsible for the conformance to this guideline. The safety officer and the contractors' supervisor should assure that the contractor has received this guideline and operates in accordance with it.

3.7. In lifting works that are complicated in the safety officer's opinion, a detailed lifting plan should be prepared and a checklist should be completed.

Checklist for lifting works

Date: _____

Work description (describe the place, the load, the crane / lifting machine intended for the work; if necessary, attach a diagram).		
Site examination:		
Safe distance of the crane arm / the load from electric cables or from structures / other obstacles.	Yes / No	Detail:
Ground conditions: risk of sinking, collapse, steep slope, possibility of stabilizers' deployment.	Yes / No	Detail:
The work sector is free of obstacles.	Yes / No	Detail:
The surface on which the load would be placed is suitable for the load. Preparation of the load anchoring.	Yes / No	Detail:
Planning the path that is as short and close to the ground as possible. Make sure that there is no deviation from the load table.	Yes / No	Detail:
Lighting and weather conditions permit the safe accomplishment of the work.	Yes / No	Detail:
Documents examination:		
The crane, lifting accessories and lifting machines have valid reports signed by a certified inspector.	Yes / No	Detail:
The operator holds a valid permit for the crane / lifting machine.	Yes / No	Detail:
There is a table of safe workloads for the crane.	Yes / No	Detail:
Preparation and examination of machines and the load before the lifting:		
Visual examination of good repair of the crane, lifting accessories and lifting machines		
The weight of the load.	Detail:	
The center of gravity of the load. There is no deviation from the load table.	Detail:	
Examination of the load's anchoring points.	Yes / No	Detail:
The crane, lifting machines and lifting accessories are suitable for the load's size.	Yes / No	Detail:
The crane's location with respect to the load.	Detail:	
The load's fastening and harnessing is such that it would not slip or hit the slings and the accessories (slings do not pass over sharp corners, side force is not applied to the shackles, etc.).	Yes / No	Detail:
Preparation of guide ropes for the load.	Yes / No	Detail:

Prevention of entrance of any vehicle and passerby to the lifting area. Marking and signage.	Yes / No	Detail:
In the course of lifting:		
Deployment of stabilizers and plates beneath them.	Yes / No	Detail:
The load has been released from its position (bolts etc.) and is free for lifting. Initial slow lifting to the height of 10 cm to assure the load's stability, fastening and harnessing.	Yes / No	Detail:
Moving the load without sharp movements for the prevention of its shaking.	Yes / No	Detail:
No man should stand under the load. No man should stand between the wall and the object capable of crushing him. Wear safety helmets and high visibility clothing in the lifting area.	Yes / No	Detail:
Signaling by means of a certified signalman only.	Yes / No	Detail:
Eng of lifting:		
Anchoring / securing the load at its new place against falling and slipping prior to releasing the sling from the crane / lifting machine.	Yes / No	Detail:
Do not move the crane / truck from its place prior to folding the crane and the stabilizers.	Yes / No	Detail:

Foreman * (name and signature): _____ Crane operator * (name and signature): _____

Safety officer (name and signature): _____

* In the case of a complicated work in the safety officer's opinion, he should also sign the form.

Checklist for work at height with a lifting platform or a man basket

Date: _____

Work description (describe the place, the work, the crane / lift truck / man basket / lifting platform intended for the work:		
Site examination:		
Safe distance of the crane arm / man basket / lifting platform from electric cables or from structures / other obstacles.	Yes / No	Detail:
Ground conditions: risk of sinking, collapse, steep slope, possibility of stabilizers' deployment.	Yes / No	Detail:
The work sector is free of obstacles.	Yes / No	Detail:
Planning the path that is as short and close to the ground as possible. Make sure that there is no deviation from the load table.	Yes / No	Detail:
Lighting and weather conditions permit the safe accomplishment of the work.	Yes / No	Detail:
Documents examination:		
The crane, lift truck, man basket, lifting platform, lifting accessories and lifting machines have valid reports signed by a certified inspector. The man basket is suitable for the crane (specified in the report).	Yes / No	Detail:
The operator holds a valid permit for the crane / lift truck / lifting platform.	Yes / No	Detail:
There is a table of safe workloads for the crane / lift truck / man basket / lifting platform.	Yes / No	Detail:
The worker has a valid certification for the work at height.	Yes / No	Detail:
The lift truck operator has at least one year experience of operating a lift truck.	Yes / No	Detail:
Preparation and examination of machines and the load before carrying out the work:		
Visual examination of good repair of the crane, man basket, lifting platform, lifting accessories and lifting machines. Examination of good repair of guardrails.		
The weight of the load on the man basket / lifting platform does not deviate from the load table.	Detail:	
Examination of the man basket's anchoring points to the crane / lift truck (conformance and double locking).	Yes / No	Detail:
Examination of the safety harness anchoring points to the man basket / lifting platform.		
The first lifting of the man basket to the maximum height without a man in the basket.	Yes / No	Detail:
Prevention of entrance of any vehicle and passerby to the lifting area. Fencing, marking and signage.	Yes / No	Detail:
In the course of carrying out the work:		
Deployment of stabilizers and plates beneath them. Securing against accidental movement. Applying a parking break.	Yes / No	Detail:
Worker's harnessing to the man basket / lifting platform by means of a safety harness.	Yes / No	Detail:
The platform / man basket should not be loaded beyond the permitted load.	Yes / No	Detail:
No worker should place himself outside the safety guardrail of the man basket / lifting platform.		
No worker should be located in the man basket while the crane / lift truck / lifting platform is moving unless the latter is intended for riding with a worker inside.		
No man should stand under the platform / man basket. No man should stand between the wall and the object capable of crushing him. Wear safety helmets and high visibility clothing in the working area.	Yes / No	Detail:
The lift truck operator should sit on the driver's seat and maintain visual contact with the worker in the man basket all the time while there is a worker in the man basket.	Yes / No	Detail:
Eng of work:		

Do not move the crane / truck from its place prior to folding the crane and the stabilizers.	Yes / No	Detail:

Foreman * (name and signature): _____ Crane operator * (name and signature): _____

Safety officer (name and signature): _____

* In the case of a complicated work in the safety officer's opinion, he should also sign the form.

Appointment of the lifting machine operator

(a) Appointer (on behalf of the EAPC Ltd.)

Name _____

Complex _____

Position _____

(b) Description of the lifting machine to which the appointment relates

Machine designation _____ Manufacturer _____

Identification number _____ Safe working load _____

The machine is powered _____
(mechanically, electrically, hydraulically, pneumatically)

(c) Operator

Family name _____ First name _____ Father's name _____

ID number _____ Year of birth _____ Profession _____

Address _____

(d) Appointer's declaration

I the undersigned hereby declare that I have appointed the person whose details are listed above in the paragraph (c) to operate the lifting machine described above in the paragraph (b), and that he meets all requirements specified in Article 18 of the Workplace Safety Regulations (Crane Operators, Operators of Other Lifting Machines and Signalmen), 1992.

Date _____ Name of Appointer _____ Signature _____

(e) Operator's declaration

I hereby declare that all personal data specified above in the paragraph (c) are correct, and I have received instruction on the operation of the machine described above in the paragraph (b) as required in Article 18 of the Regulations mentioned above in the paragraph (d).

Appendix K

1. Background

According to the Transport Services Law – 1997, transportation of dangerous substances must be carried out by a certified carrier, on an authorized vehicle , marked and placarded according to the regulations.
Crude oil is defined as a dangerous substance, due to the fact that it is a flammable substance.
Three bodies are responsible for the compliance with the regulations: the forwarder, the carrier and the receiver, therefore whenever EAPC is transporting crude oil/ distillates by road tankers, we are partly responsible.

2. Object

To ensure safe work during fuel transportation by road tankers
To ensure transportation of crude oil/ distillates by road tankers for EAPC is performed according to the regulations.

3. Performance

3.1. The head of the line maintenance unit and the heads of the systems shall ensure that the transportation of crude oil (or other fuel) is carried out by an authorized carrier on a vehicle that complies with the regulations.

3.2. The head of the line unit shall ensure that the fuel transportation contractors, employed by the unit for fuel transportation (in case of damage to the line, water suction, etc) are actually authorized to perform the transportation according to law.

3.3. The head of the line maintenance unit and the heads of the systems are responsible to ensure that the vehicle driver has the bill of lading and the emergency card and that the vehicle is under control as required.

3.4. The entry of a tanker to a tank spill containment area will be authorized only after a gas test that confirms the absence of explosive/ toxic atmosphere,

3.5. Electric potentials between the tanker and the loaded/ unloaded tank must be equalized prior to the beginning of loading/ unloading by bonding with a conducting cable with a cross section of at least 14 mm^2 . The resistance of the bonding to the tank/ tanker will not exceed 10 ohm. The cable shall be removed only after the loading/ unloading is completed.

3.6. Grounding shall be provided when pumping from a puddle. It is recommended to bond to a large grounded body (underground piping, tank installed on the ground, etc) if possible. If such a body does not exist in the vicinity, grounding must be provided by a steel plate with a thickness of 5/8", and sides measuring at least 0.5 m, buried in the ground to a depth of at least 80 cm

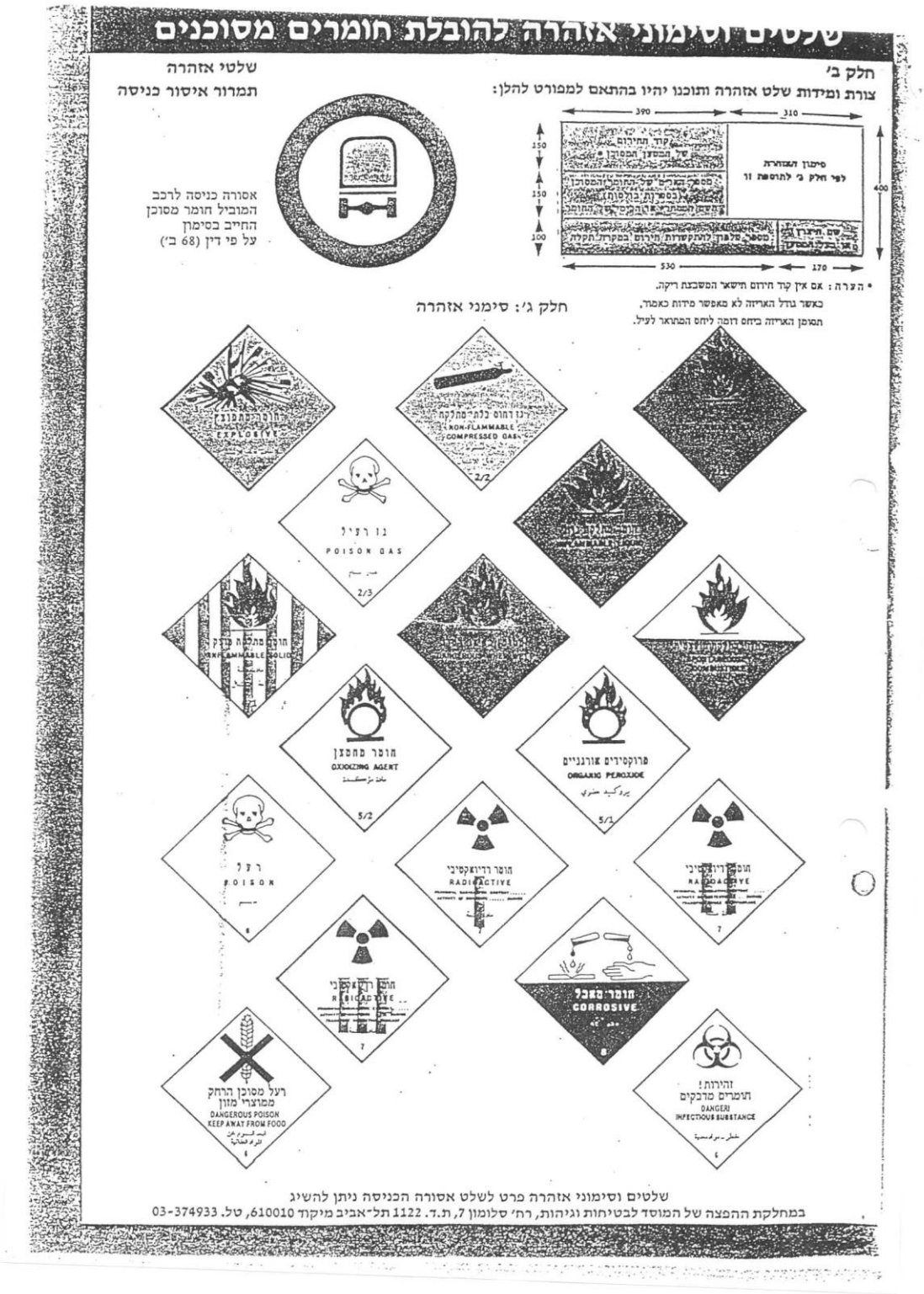
4. References

Transport Services Regulations, 2001, as published in the Collection of Regulations 6088, page 446, of 19/2/2001. Attached (39 pages)
Note: The order concerning Supervision of Goods and Services (transportation services and towed services) – 1978 is cancelled

5. Emergency card for the transportation of crude oil

5.1. The MSDS of crude oil is attached
5.2. Standard signs for crude oil are attached
5.3. Emergency card for the transportation of crude oil is attached

Safety card (for road transport)



אגף הנדסה - ת.ד.801 אשקלון, 78101 ◄ טל. 08-6740611 ◄ פקס. 08-6740629 www.eapc.co.il

Engineering Dept. - P.O.B. 801 Ashkelon 78101, Israel ► Tel. 972-8-6740611 ► Fax. 972-8-6740629

Safety Card

Product name : Crude Oil
Classification group (according to the written book) : 3
Emergency code: 3WE
UN number: 1267
Nature of the hazard:

1. Very flammable
2. On burning releases carbon oxides
3. May be ignited by heat, sparks and flame
4. Fire may cause sudden explosion of the tank
5. Creates an explosive mixture above room temperature
6. Flammable vapors may travel long distances from the leak point

Protection measures for handling the product

Fire

Wear a self-contained breathing apparatus in addition to the fire protection suit
In case of fire: dry chemicals, CO2, water spray, foam. Use also Halon.
Major fire: water spray, mist, foam.
Use a water jet for an extended period of time for cooling the tanks. Move away in a direction that is perpendicular to the wind direction.
Contain the damaged area and forbid entrance.
Evacuate the tank for the area without endangering. Place an earth barrier between the fire and the tank/product
Tanker on fire: evacuate the area on a radius of 1 km
Evacuate the area when hearing a noise from the emergency valve
Major fire: unmanned hose holder

Release

Wear PPE required for handling the release source. Stop leakage if possible and safe to do it.
Stop immediately any possible ignition source. Prevent water flow to the leakage source.
Contain the damaged area and forbid entrance. Do not touch the material.
If the leakage occurred in a closed place, it must be ventilated. Place the tank with the leakage opening pointing upwards.
Absorb the material with sand and evacuate for burial.
Continuous release – consider population evacuation.
In case of water contamination, notify the authorities in charge.

Spills

Wear PPE required for handling the spillage source.
Stop immediately any possible ignition source.
Contain the damaged area and forbid entrance. Do not touch the material.
Spray with water to reduce the vapors amount.
Build an earth barrier to prevent material from spreading.
Neutralize the spill. See paragraph "Neutralization methods". Consider population evacuation.
In case of water contamination, notify the authorities in charge.

Material neutralization method

Absorb/ mix with sand. Transfer to a site authorized by the authorities. Mixing ratio: about 10 kg sand for each kg of crude oil.

First aid

Inhalation:
Remove the victim from exposure area. Let him rest and maintain body temperature
Perform artificial respiration – if stopped breathing, supply oxygen if possible
Obtain medical attention.

Ingestion:
Wash the mouth thoroughly with water
If the victim is conscient, make him drink plenty of water. Do not induce vomiting.
Obtain medical attention.

Skin contact:
Remove contaminated clothing
Wash skin thoroughly with soap and water.
Obtain medical attention.

Eyes contact:
Flush eyes with water for 15minutes
Obtain medical attention.

Emergency numbers
Police: 100 Fire fighters: 102
MADA: 101
EAPC emergency number: 1-800-225262
National information center for hazardous materials: 08-9239239

emergency code קוד חרום

3WE

UN No מספר או"ם

1267

1-800-225262

דלק גולמי

crude oil

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Safety Card

Product name : Jet fuel
Classification group (according to the written book) : 3
Emergency code: 3YE
UN number: 1863
Nature of the hazard:

1. On burning releases carbon oxides
2. May be ignited by heat, sparks and flame
3. Fire may cause sudden explosion of the tank
4. Creates an explosive mixture above room temperature
5. Flammable vapors may travel long distances from the leak point
6. Very flammable

Protection measures for handling the product

Fire

Wear a self-contained breathing apparatus in addition to the fire protection suit
In case of fire: dry chemicals, CO2, water spray, foam. Use also Halon. Do not disperse the fuel with water.
Major fire: water spray, mist, alcohol foam.
Use a water jet for an extended period of time for cooling the tanks. Move away in a direction that is perpendicular to the wind direction.
Contain the damaged area and forbid entrance.
Evacuate the tank for the area without endangering. Place an earth barrier between the fire and the tank/product
Tanker on fire: evacuate the area on a radius of 1 km
Evacuate the area when hearing a noise from the emergency valve
Major fire: unmanned hose holder

Release

Wear PPE required for handling the release source. Stop leakage if possible and safe to do it.
Stop immediately any possible ignition source. Prevent water flow to the leakage source.
Contain the damaged area and forbid entrance. Do not touch the material.
If the leakage occurred in a closed place, it must be ventilated. Place the tank with the leakage opening pointing upwards.
Absorb the material with sand and evacuate for burial.
Continuous release – consider population evacuation.
In case of water contamination, notify the authorities in charge.

Spills

Wear PPE required for handling the spillage source.
Stop immediately any possible ignition source.
Contain the damaged area and forbid entrance. Do not touch the material.
Spray with water to reduce vapors amount.
Build an earth barrier to prevent material from spreading.
Neutralize the spill. See paragraph "Neutralization methods". Consider population evacuation.
In case of water contamination, notify the authorities in charge.

Material neutralization method

Absorb/ mix with sand. Transfer to a site authorized by the authorities. Mixing ratio: about 10 kg sand for each kg of fuel.

First aid

Inhalation:
Remove the victim from exposure area. Let him rest and maintain body temperature.
Perform artificial respiration – if stopped breathing, supply oxygen if possible
Obtain medical attention.

Ingestion:
Wash the mouth thoroughly with water
If the victim is conscient, make him drink plenty of water. Do not induce vomiting.
Obtain medical attention.

Skin contact:
Remove contaminated clothing
Wash skin thoroughly with soap and water.
Obtain medical attention.

Eyes contact:
Flush eyes with water for 15 minutes
Obtain medical attention.

Emergency numbers
Police: 100 Fire fighters: 102
MADA: 101
EAPC emergency number: 1-800-225262
National information center for hazardous materials: 08-9239239

emergency code קוד חרום

3Y

UN No מספר או"ם

1863

דס"ל

08-6740221

www.eapc.co.il ◄ פקס. 08-6740629 ◄ טל. 08-6740611 ◄ 78101 אשקלון, ת.ד.801 **אגף הנדסה** -

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Appendix L

Safety	Safety Instruction no. 2-30-060	Edition: 03.14
Page 85 of 105	Work on Heights	
	Approved: Boaz Harel, Head of Safety and Environmental Protection Division	

1. Background

Most of the fatal and severe work accidents (severe permanent disability) occur with work at heights. Most of the works at heights include renovation, construction, installation, etc where there are no permanent guardrails and platforms that protect from fall. The Safety at Work Regulations (work at heights) 2007 were issued for this purpose (hereinafter the regulations). The regulations detail the types of works at heights, the powers and certifications, equipment, inspections and safety measures to be taken.

Work at heights is defined in the regulations as: " Any works, including access to the workplace, that due to them a worker might fall to a depth exceeding 2 m, and including said work: (1) Work that is executed from a work platform without fencing or standard railing; (2) Work that requires a person to bend its body at more than 45 degrees outside the fence or railing of the work platform or the passage sidewalk, as applicable; (3) Work that is performed from a mobile raising platform, hoisting basket or mechanized scaffold"

2. Purpose

To define the method for the execution of work at heights at the company in a safe manner. To ensure compliance with standards.

3. Method

3.1. Work at heights shall be executed on if necessary and cannot be executed safely at the ground level

3.2. Work at heights shall be conducted according to the regulations.

3.3. Work at heights require the approval of the direct manager of the worker. The manager and the worker shall review together the attached checklist. The attachment lists works at heights usually performed at the company. It emphasizes the main weaknesses and it does not replace the regulations.

3.4. Equipment for work at heights shall be inspected by the worker prior to the beginning of the work. The inspection shall include intactness, standard and validity. If the equipment fails the inspection it must be replaced.

3.5. It is absolutely forbidden to lift a person in a non standard basket or device (such as a tractor loader)

3.6. Persons must be kept away from an area where a person or an object are likely to fall.

3.7. Momentary loss of attention may cause a fall. Concentrate on the work. If you feel unwell and cannot concentrate on the work, do not work at heights. Do not distract a worker that is performing work at heights.

Checklist – checks to be performed prior to starting work at heights

1. **In general for any work at heights**

   1.1. Valid certification for work at heights for the type of work to be performed

   1.2. Personal protective equipment including safety harness, helmet measures for fall prevention/ arrest

   1.3. Equipment inspection (validity, intactness, standard)

   1.4. A additional worker at ground level, maintaining eye contact with the worker at heights

   1.5. Persons must be kept away from the fall area. Equipment and work tools must be secured against falls.

   1.6. General safety training at the work place.

   1.7. Work at heights during extreme weather conditions (pouring rain, strong winds) and low visibility conditions should be avoided. Special instructions are required for work under the above conditions.

2. **Work on ladders**

   2.1. Ladders may be used for passage between levels and short time works that do not require effort and bending the body in such a way that the person loses its balance.

   2.2. Make sure the ladder is intact with all its steps. A portable ladder must have non-slip feet.

   2.3. Make sure the ladder has an Israeli Standard Mark

   2.4. Face the ladder when going up or down and have both hands free to hold the ladder.

   2.5. The ladder must be placed on a horizontal stable basis, supported by a stable support in such a way that it will not move when used. Take suitable measures to prevent the ladder from slipping or being turned over.

   2.6. The ladder will be placed at an angle of 65-76º relative to horizontal (a slope between one horizontal to four vertical up to one horizontal to two vertical)

   2.7. A self-supporting portable ladder (ladder A) will have an original and intact width limiting device. The device shall be completely open. Do not "walk" with the ladder.

3. **Work on a mobile platform and in a man basket**.

   3.1. Make sure the forklift/ crane, the mobile platform have a valid inspection certificate, the man basket is compatible with the forklift/ crane. Checklist according to instruction 2-30-024

   3.2. The basked is secured to the forklift/ crane

   3.3. Do not drive the forklift/ crane when a person is in the basket

   3.4. Do not climb over the basket or mobile platform rail

   3.5. The worker must be secured to an anchoring point on the basket/ platform

   3.6. An inspection must be performed at the beginning of the work day – tires, cables, rails, balance loads, safety signs, operating systems, access roads, hazards signs.

   3.7. Check during work : irregular noises and shaking, dangerous slope, irregular response of the operating system and emergency pressures.

4. **Work on masts**

   4.1. A certified worker for masts climbing. Direct and permanent watch of a professional manager of masts climbing works

4.2. Valid inspection of the mast and axial fall prevention means (cable, track, mouse) (by a certified inspector or mechanical or civil engineer registered 5 years)

4.3. Visual inspection of the mast and anchoring cables intactness. Inspection of mouse locking during fall)

4.4. Grounded mast

4.5. Transmitter disconnection or written safety instructions, if the mast carries a transmitter transmitting during the work on the mast.

4.6. The worker is secured for the whole duration of the work and uses an axial fall arrest system, rigid and vertical

5. Daily inspection of the personal protective equipment (in addition to standard and validity)

5.1. Safety harness

- Lanyard intact with no cuts, burns or tears
- Buckles intact and not rusted, open and close swiftly
- Intact and closed stitches
- There are no signs of contact with corrosive materials, sun damage, friction

5.2. Safety line and fittings

- Intact without cuts, no changes in thickness, no burn, friction or sun damage signs
- The line end is closed with a loop and contracting sleeve

5.3. Rings, hooks and metal anchoring means

- No cracks, deformation, rust
- Easy screwing
- Intact bridge spring

5.4. Friction straps and any other item made of straps

- Intact straps without cuts, burns, tears. No signs of corrosive materials, sun damage
- Intact and complete stitches. No friction signs
- Contracting sleeve intact and covers the whole dumper.

5.5. Helmets

- Intactness, cracks, dip grooves
- Intact straps, no cuts, tears or burns. Buckles intact and close swiftly
- Intact internal straps connected to the helmet body

Appendix M

Safety	Safety Instruction no. 2-30-061	Edition: 4/14
Page 88 of 105	Lock out/ Tag out (LOTO) of equipment under maintenance, repair, servicing, dismantling and installation	Update 1: 05.15
	Approved: Boaz Harel, Head of Safety and Environmental Protection Division	

1. Background

A great part of the company equipment is remotely controlled. The operator does not have visual contact with the equipment (pumps, vents, mixers, etc), unintentional operation of equipment or machinery during maintenance, repair, servicing, etc may cause an accident. Opening of a vent or the operation of a pump in the direction of an open pipeline may cause an accident or a hazardous materials incident .

2. Definitions

Energy isolation device – a mechanical device that physically prevents transfer or release of energy or hazardous materials to the equipment, such as disconnection switch, tap/ valve on piping, etc. this device must be locked and tagged when a LOTO plan is implemented at the facility.
Energy sources – hazardous material (such as fuel, liquefied petroleum gas, mercaptans, nitrogen) that is likely to be released to the environment and/ or to cause injury to the person that handles the equipment (such as pipeline, pump, vent, PLIDCO "הפתוח השלב העבודה לסביבה ") electricity sources, heat , chemical, pneumatic, hydraulic, radiation, mechanical, kinetic (including gravitation, spring, compressed gas) sources.
Lock – a physical device (such a lock) that prevents the operation of an energy isolation device and the transfer of energy to the equipment.
Works that require LOTO – works during which unintentional opening of a vent may cause a hazardous materials incident (such as opening a vent to a line opened to the environment). Works during which the operation of an energy isolation device may harm the worker that handles the equipment (maintenance, servicing and tuning works that require the dismantling of shields, electricity works, etc)
LOTO plan – a plan (usually specific for the entire pipeline system, equipment/ machinery) that details the energy sources of the pipeline, the equipment, and the machinery, and the suitable manner of locking or isolating each energy source. While pointing out the lock-out sites (the energy isolating devices).
Tag – a tag that warns the workers against danger that may be attached to the related place. The tag specifies the danger type and the name of the worker that placed it.
Tag out – attaching a tag (sign) to an energy isolation device, according to a plan, in order to indicate that the device may be operated only after the removal of the tag.

3. Purpose

To define a method for ascertaining, before and during the execution of works, servicing, repair, maintenance, etc, on a certain equipment, that the equipment cannot be operated. To disconnect and release energy from the equipment. To make sure the equipment is disconnected and energy is released.

4. Method

Prior to the beginning of the task, evaluate if the work requires LOTO.

4.1. For works that require LOTO, prepare a LOTO plan according to the annex to this instruction. LOTO will be performed on the energy isolating device that is as close as possible.

Disconnection and LOTO process steps:

4.2. Prior to disconnection, coordinate the disconnection and the LOTO works with the head of the department and with control and launching that usually operate the equipment.
4.3. Stop and close the equipment in a controlled and methodical manner. Lock, disconnect and tag vents (when a vent has with electrical/ pneumatic and manual operation, both must be locked) and hazardous materials sources. Disconnect electricity, air pressure, hydraulic pressure. Perform LOTO according to the plan
4.4. Make sure the equipment is free from energy sources and from residual or stored energy. Then return the operating switch to the "OFF" position. Check that it energy cannot be supplied from a bypass.
4.5. If needed, and according to the instructions of the LOTO plan, add devices for blocking and preventing access to the equipment to unauthorized persons. (such as locked doors, barriers, fencing and sign posting)
4.6. Notify control and launching that usually operate the equipment that the equipment is disconnected. Notify the head of the department that usually operates the equipment that the equipment is disconnected.

LOTO removal steps

4.7. Prior to removing the locks and the tags, coordinate the works with the head of the department and with control and launching that usually operate the equipment.
4.8. Make sure the place/ equipment is free of materials, tools and equipment that may interfere with the equipment operation. Check that equipment and tools that are not needed were removed from the place/ equipment.
4.9. Check all the protection devices were installed. Check that the seals were installed (anchors, seals, PLIDCO)
4.10. Check the equipment switch is in the OFF position
4.11. Notify all the workers around the equipment that it is now operational
4.12. Remove lock and tag
4.13. Update the head of the department and the control and launching that usually operate the equipment, that it is now operational.

Responsibility

4.14. For works on operational equipment where unintentional opening of a valve may result in a hazardous materials incident, the head of the operation department of the complex/ the head of the line unit will prepare a LOTO plan

4.15. For maintenance works, servicing, tuning of equipment and machinery where a danger of injury from an energy source exists, the head of the maintenance department of the complex/ head of line unit will prepare a LOTO plan.

4.16. Maintenance, servicing and tuning works of equipment and machinery where a danger of injury from an energy source exists, will be carried out solely by workers that were trained and certified by the head of the maintenance department of the complex/ head of line unit

4.17. For works for which a general permit was issued requesting the performance of LOTO, the name of the person responsible for the LOTO shall be specified in the general permit.

LOTO plan for works on pipelines and fittings that contain fuel or liquefied petroleum gas

Facility: _____ System: _____ work description: _____

Flowchart no.

Description of an isolated segment (1):
List of valves that isolate the segment

	Oper. No. of	LOTO to operator (2)	LOTO location (2)	LOTO done by

	the valve/ valve descript.			(name, signature) (3)
1		Electrical/ pneumatic/ manual	Operating handle or wheel/ power room/ power closet/ local switch	
2		Electrical/ pneumatic/ manual	Operating handle or wheel/ power room/ power closet/ local switch	
3		Electrical/ pneumatic/ manual	Operating handle or wheel/ power room/ power closet/ local switch	
4		Electrical/ pneumatic/ manual	Operating handle or wheel/ power room/ power closet/ local switch	
5		Electrical/ pneumatic/ manual	Operating handle or wheel/ power room/ power closet/ local switch	
6		Electrical/ pneumatic/ manual	Operating handle or wheel/ power room/ power closet/ local switch	
7		Electrical/ pneumatic/ manual	Operating handle or wheel/ power room/ power closet/ local switch	
8		Electrical/ pneumatic/ manual	Operating handle or wheel/ power room/ power closet/ local switch	
9		Electrical/ pneumatic/ manual	Operating handle or wheel/ power room/ power closet/ local switch	

Location and method for checking the isolated segment was emptied of fuel or liquefied petroleum gas: _____

The plan was prepared by: name: _____ signature: _____ date: _____

Permission to remove lock and tag: name: _____ signature: _____ date: _____

Distribution: complex and facility control room, launching room, head of operation department, head of operations department

(1) Indicate on the flowchart the isolated segment and attach to this form
(2) Circle as applicable
(3) If the vent has a manual + electric/ pneumatic switch, two LOTO tasks must be filled

Execution plan for maintenance, servicing and tuning on machinery and equipment where a danger of injury from an energy source exists.

Site: _____ system: ___
Description of the equipment/ machinery: _____
Description of the work: _____
Description of the dangerous energy source: mechanical, electric, pneumatic, hydraulic, hazardous materials, radiation, other: ___
Location and description of the switch/ valve to be locked and tagged: ___
Location and description of the method for ascertaining that it is not possible to unintentionally operate the equipment and that no residual energy was left in the equipment/ machinery: ___

Head of the maintenance department / head of line unit: name: _____ signature: ____
Worker responsible for locking and tagging: name: _____ role: ____ signature: ____ date: ___
Permission to remove lock and tag: name: _____ role: ____ signature: ____ date: ___
Distribution: head of the department that operates the equipment, complex/ execution division safety manager

Appendix N

No.	9-11-01	**Standard**	Permit for carrying out works involving hazards and fire hazards at the company's facilities		
Edition:	August 1988	**Subject:**	Work permits		
Update:	January 2016	**Responsibilty for updating:**	Safety and Environmental Protection Department		
Version:	13	**Status**	**Valid**	**Non classified**	Page 92 of 105 pages

Standard

Permit for carrying out works involving hazards and/or fire hazards at the company's facilities

Background

1. The company's core business is transfer and storage of various kinds of fuel. The company operates fuel terminals comprising ports and large tankfarms, as well as fuel pipelines within Israel counting hundreds of kilometers of active pipelines. Among the works carried out at the complexes and fuel lines there are works the performance of which may cause accidents, ignitions, explosions, spills and leakages capable of inflicting physical and mental harm, damage to the environment, property, image and to the company's reputation leading to the loss of customers.

Purpose

2. Establishing the method of receiving permits for carrying out works involving hazards and/or fire hazards.

Definitions

3. General work permit:

   A permit for carrying out works involving hazards. The work permit is not valid without a daily work approval.

   Daily work approval:

   Daily work approval is limited to one calendar day. Daily work approval is not valid without a general work permit.

   Performer:

   A contractor's foreman or a sector manager responsible for carrying out the work at the site / complex.

   Works that require receiving a general work permit for carrying out works involving hazards and/or fire hazards:

   Works producing open fire, sparks, heat and works involving special hazards – see details in the appendix.

4. Method

Two valid approvals are required for carrying out works involving hazards and/or fire hazards: a general work permit and a daily work approval.

Issuing a general work permit:

4.1. The performer should apply, as early as possible, to the complex / operational division safety officer and submit a request for general work permit. The request should be as detailed as possible and comprise the work's description, the work's location, the system on which the work would be carried out, the work's method, tools and machinery to be used for carrying out the work.

4.2. The complex / operational division safety officer should issue a work permit. A general work permit should comprise four parts:

4.2.1. The date and serial number, the permit's validity period, the work's description, the work's location, the system on which the work would be carried out, the work's method, tools and machinery to be used for carrying out the work, the contract / work order number if the work is to be carried out by a contractor. The permit's serial number should comprise the date, the number of the complex / operational division / line unit and the running number if on that particular day more than one permit has been issued. For example, the number of the permit issued by the Eilat complex on 4/7/13 should be: 1/01/040713. The general work permit's validity period should be three months at most as of the day of issuing the permit. If the work lasts longer, a new permit should be issued. The safety officer is authorized to prolong an existing approval for additional three months.

4.2.2. Details of the safety measures that should be taken prior to starting the work, in the course of work and its end. The safety measures should be in accordance with the company's relevant safety guidelines. If the company's relevant safety guideline contains a checklist, such checklist should be attached to the permit as part thereof.

4.2.3. Details of the work stages' approval and coordination with the Operations and/or other parties.

4.2.4. Approvals and signatures.

Issuing a daily work approval:

4.3. At the beginning of each day of work, the performer should apply to the contractors' supervisor / the fire safety sector manager / the shift manager for receiving a daily work approval. The performer should detail which works are intended to be carried out, the work's method, the work's location, tools and machinery to be used for carrying out the work on that day.

4.4. The safety officer / the contractors' supervisor / the fire safety sector manager / the shift manager should issue to the performer a daily work approval after the following is checked:

4.4.1. The general work permit is valid and conforms to the request for a daily work approval.

4.4.2. The conditions on that particular day allow carrying out the work safely in accordance with the work permit (for example: whether no other work is carried out at the work site on that day).

4.5. A daily work approval should comprise:

4.5.1. The date, the time of start and the time of end of the work.

4.5.2. The number of the general work permit on the basis of which the daily work approval has been issued.

4.5.3. The work's description, the work's method, the work's location, tools and machinery to be used for carrying out the work on that day.

4.5.4. Approvals and signatures.

4.6. <u>Approvals and signatures</u>

4.6.1. General work permit and daily work approval for the works at the complex for which the complex is responsible.

4.6.1.1. The general work permit for a work in the complex should be approved and signed by:

Safety officer.

Manager of the maintenance department.

Manager of the operations department.

Contractors' supervisor (if the performer is a contractor).

The performer should sign and confirm the receipt and the work in accordance with the permit.

4.6.1.2. The daily work approval for a work in the complex should be approved and signed by one of the following four:

Safety officer.

Contractors' supervisor.

Manager of the fire safety sector.

Shift manager.

The performer should sign and confirm the receipt and the work in accordance with the approval.

4.6.2. General work permit and daily work approval for the works at the complex for which the operational division is responsible.

4.6.2.1. General work permit for the works at the complex for which the operational division is responsible should be approved and signed by:

Safety officer of the complex.

Manager of the maintenance department of the complex.

Manager of the operations department of the complex.

Contractors' supervisor of the operational division.

The performer should sign and confirm the receipt and the work in accordance with the permit.

4.6.2.2. Daily work approval for the works at the complex for which the operational division is responsible should be approved and signed by one of the following three:

Contractors' supervisor of the operational division.

Manager of the fire safety sector.

Shift manager.

In addition, the performer should sign and confirm the receipt and the work in accordance with the approval.

4.6.3. General work permit and daily work approval for the works at a line unit

4.6.3.1. General work permit for the works at a line unit should be approved and signed by:

Safety officer of the operational division.

Manager of the line unit.

Safety representative of the line unit.

Contractors' supervisor of the operational division (if the performer is a contractor).

The performer should sign and confirm the receipt and the work in accordance with the permit.

4.6.3.2. Daily work approval for the works at a line unit should be approved and signed by one of the following two:

Contractors' supervisor of the operational division (if the performer is a contractor).

Safety representative of the line unit.

The performer should sign and confirm the receipt and the work in accordance with the approval.

4.7. **Briefing and preparatory meeting prior to carrying out the work**

In addition to the written directions contained in a general work permit, a verbal briefing and a preparatory meeting ("Sheet") should be held.

4.7.1. Preparatory meeting ("Sheet")

Prior to carrying out the works lasting over two months, or a work with fire on the piping / tank / equipment of the tank or equipment containing fuel, or any other work involving hazards in the opinion of the complex manager / deputy CEO for operations / the line unit, a preparatory meeting should be held.

At this meeting the performer, the supervisor and the safety officer should present the complex manager / deputy CEO for operations / the line unit with all parts of the work permit. An emphasis should be made on safety vulnerabilities and the ways of their control, the company's safety guidelines relevant to this work, the coordination and supervision.

4.7.2. The safety officer should verbally instruct the supervisor and the performer, prior to their signing the general work permit, on all matters required by the permit. An emphasis should be made on safety vulnerabilities and the ways of their control, the company's safety guidelines relevant to this work, the coordination and supervision. The safety officer should instruct the supervisor and the performer on the company's safety guidelines relevant to this work. An emphasis should be made on the stop points at which the work should not be continued before receiving an approval, and on the work stages requiring close supervision.

4.7.3. The supervisor / manager of the fire safety sector / shift manager should verbally instruct the performer, prior to his signing the daily work approval, on all matters required by the permit. An emphasis should be made on safety vulnerabilities and the ways of their control, the company's safety guidelines relevant to this work, the coordination and supervision for the work day for which the daily approval is valid. An emphasis should be made on the stop points at which the work should

not be continued before receiving an approval, and on the work stages requiring close supervision.

4.8. Circulating, noticing and documenting a general work permit and a daily work approval

4.8.1. The signed general work permit and daily work approval should be circulated and kept:

4.8.1.1. A printed copy – at the work site, in a visible place accessible for every worker and visitor to the site and at the performer.

4.8.1.2. A scanned / photographed copy – in the control / dispatching room, at the safety officer of the complex / operational division and at the contractors' supervisor.

4.8.2. Every day prior to beginning the work, the performer should establish a contact by phone / by communication device / eye to eye with the control / dispatching room and update it on the details of work to be carried out on that particular day. The work details should be recorded in the control / dispatching log.

4.8.3. At the end of the work day, the performer should notify the control / dispatching room on the end of the work day, the situation in the work area and the status of the equipment and the systems. The notice details should be recorded in the control / dispatching log.

4.8.4. An updated list should be kept at the control / dispatching room of the works involving hazards that are carried out at the complex / on the lines.

4.8.5. The safety officer / safety representative should document the work permits and daily work approvals.

4.8.6. The general work permit for the works within the complex premises should be circulated to the manager of the complex, the manager of the operations department, the manager of the maintenance department, the operation engineer, the contractors' supervisor, the manager of the fire safety sector, the control room and the performer.

4.8.7. The general work permit for the works outside the complex premises should be circulated to the deputy CEO for operations, the deputy CEO for maintenance, the manager of the line unit, the manager of the operations department, the referent engineer, the operation engineer, the manager of the safety and environmental protection department, the contractors' supervisor, the control room and the performer.

4.9. Accomplishment

The work should start upon taking all safety measures and completing all coordination actions specifies in the work permit and in the daily work approval. No work involving hazards and/or fire hazards should be carried out if not mentioned in the work permit and in the daily work approval. If the conditions at the site have changed, updated work permit and daily work approval should be obtained. If a necessity arises of changing the safety guidelines in the course of the work progress or following the events occurred in the course of work, the work should be stopped and updated work permit and daily work approval should be arranged.

4.10. Supervision

4.10.1. The performer should keep at the work site the work permit and the daily work approval that should be updated, legible and accessible. Every company's / contractor's worker who identifies a work being carried out contrary to the permit should alarm the performer and the supervisor, and in the event of immediate danger should stop the work.

4.10.2. The supervisor and/or the safety officer should determine the stages of work at which a close supervision should be implemented by a position holder, and the stop points at which an approval should be required for progressing to the next stage of work.

4.10.3. If a necessity arises of changing the safety guidelines in the course of the work progress or following the events occurred in the course of work, the work should be stopped and updated work permit and daily work approval should be arranged.

5. Responsibility

5.1. The complex managers, the deputy CEO for operations and the manager of the line maintenance department should bear responsibility for the implementation of this standard's directions.

5.2. The manager of the safety and environmental protection department should bear responsibility for the updating and circulating of this standard.

Appendices:

Request form for a work permit / daily work approval.

Work permit form.

Appendix A – List of works involving hazards / ignition hazard.

Request for work permit / daily work approval

Date: _____ Performer: _____ Foreman: _____

_____ Site: _____

Complex: _____ Location: _____Contract / work order No. _____

Work description:

_____

_____

_____

Details of mechanisms, methods and means to be used for the work:

_____

_____

_____

Name and signature of the request's applicant: _____

Daily work approval for the work detailed in the above request

For the date: _____ From the time: _____To the time: _____ In accordance with work description No. _____ of the date _____

Additional conditions and constraints to the permit:

_____

_____

_____

Approve the daily work approval (name and signature): _____

Performer's confirmation: I well understand the work and safety instructions contained in this approval and in the work permit, and the work will be carried out in accordance with them.

Performer's name and signature: _____ Performer's mobile phone _____

The performer should notify the control / dispatching room before starting the work and the end of work:

A notice has been conveyed to control / dispatching room on the work start at the time _____ (Name of the notice recipient) _____

A notice has been conveyed to control / dispatching room on the work end at the time _____ (Name of the notice recipient) _____

A well legible printed signed copy of this form should be placed and made accessible at the work site.

A scanned / photographed signed copy of this form should be sent to the control / dispatching room, to the safety officer, to the contractors' supervisor and the manager of the fire safety sector.

General work permit No. ____ of the date: _____ Valid until the date: _____ In accordance with the work request of the date: _____ Site: _____ Location: _____ Contract / work order No. _____

Performer: _____ Foreman: _____ Work description:

_____

_____

_____

Methods mechanisms and means to be used for the work:

_____

_____

_____

Principal safety vulnerabilities in the work:

_____

_____

_____

Means of safety, coordination and supervision:

_____

_____

_____

_____

_____

_____

If necessary, an appendix is attached. The checklist is attached from the relevant safety guideline.

* The line unit works should be approved the manager of the line unit and the safety officer of the operations division.

Safety officer / representative: _____ * Manager of the maintenance dept. _____ * Manager of the operations dept. _____ Contractors' supervisor (in contractor work): _____

Performer's confirmation: I well understand the work and safety instructions contained in this work permit, and the work will be carried out in accordance with them.

Performer's name and signature: _____ Performer's mobile phone: _____

Appendix A

List of works involving the ignition hazard (works with the fire hazards)

The works listed below require obtaining a permit for work involving the fire hazard – providing that they are carried out in the complex's area and at the adjacent fuel facilities (except the workshop buildings and their adjacent yards) and along the fuel lines' routes.

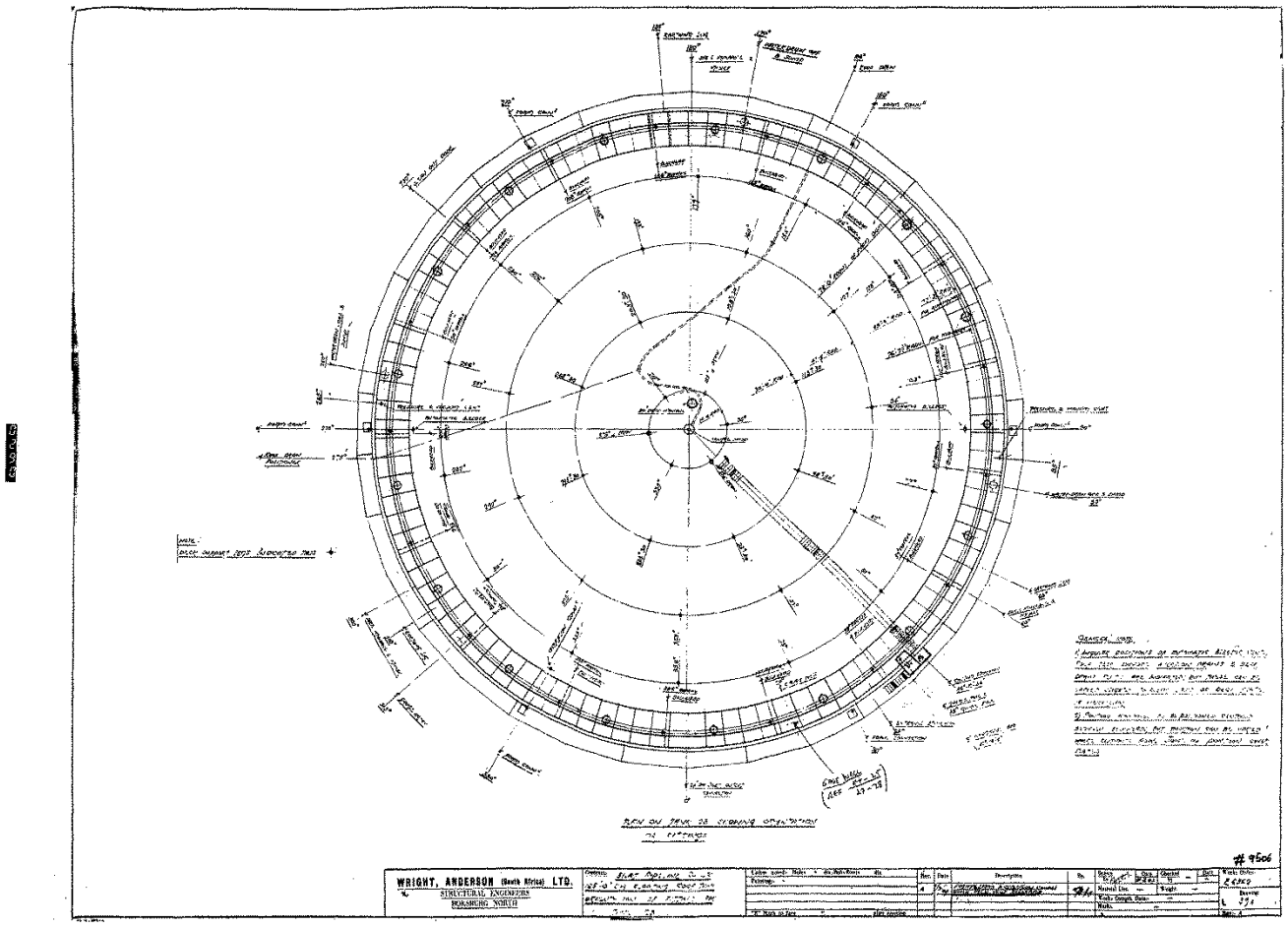
1. Connection and disconnection works on the tank or operational pipeline, or the works in the course of which an explosive atmosphere exists or may exist (except the regular maintenance works for which a maintenance guideline has been issued that relates to the explosive atmosphere hazards).
2. Welding.
3. Soldering.
4. Cutting (by means of disk, torch, air arc).
5. Grinding.
6. Building cleaning (by means of rotary brush, needles, etc.).
7. Sand blasting.
8. Any work carried out above and/or next to a fuel and ballast tank – except the maintenance works, for example: sampling, manual measurement, etc.
9. Setting bonfires for such purposes as: tar heating, incineration of garbage, etc.
10. Any work that, in the opinion of the permit issuer, involves any hazard whatsoever of producing sparks or heat.
11. The use of vehicles and mobile equipment powered by the internal combustion engines should require a permit each time that the vehicle leaves a paved road within the complex's premises.
12. Excavations above or in the vicinity of the fuel or ballast lines.

List of works involving special hazards

1. Work in confined space.
2. Exceptional work at height.
3. Construction / demolition works.
4. Excavation works / dugout works.
5. Exceptional lifting / loading works.
6. Exceptional marine works.

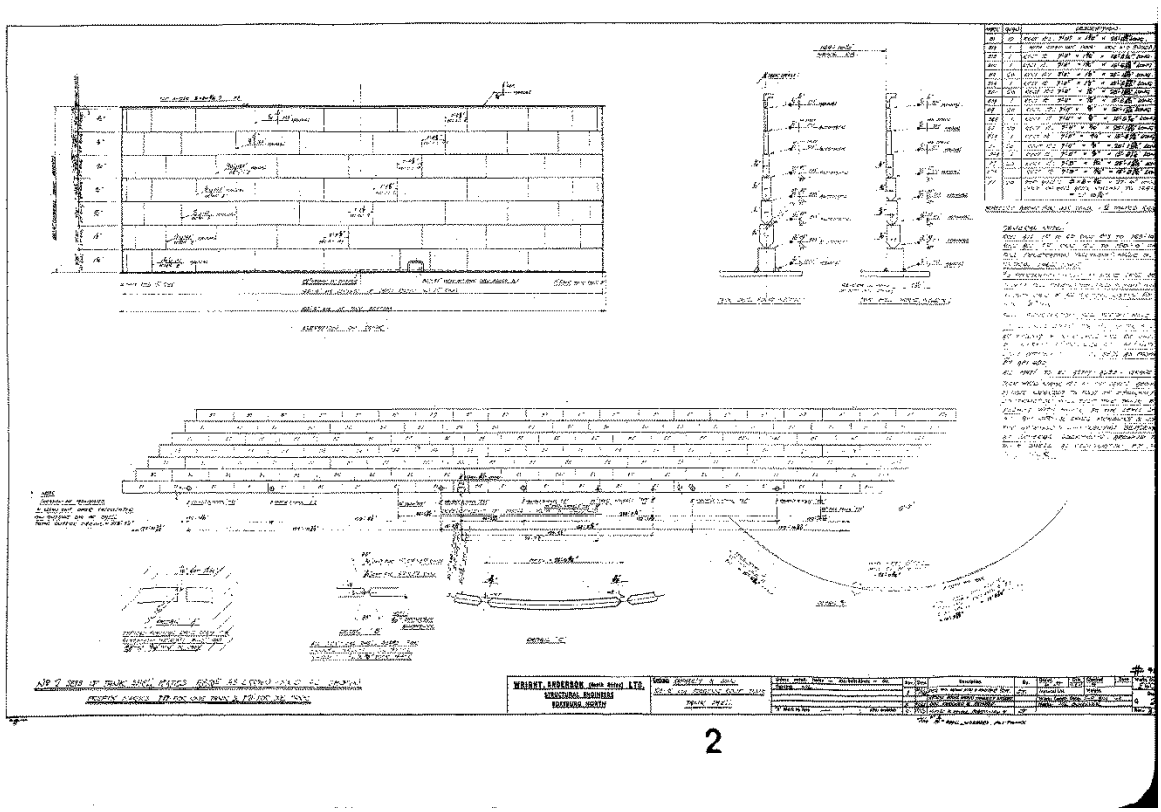
Appendix O

AO



Appendix P

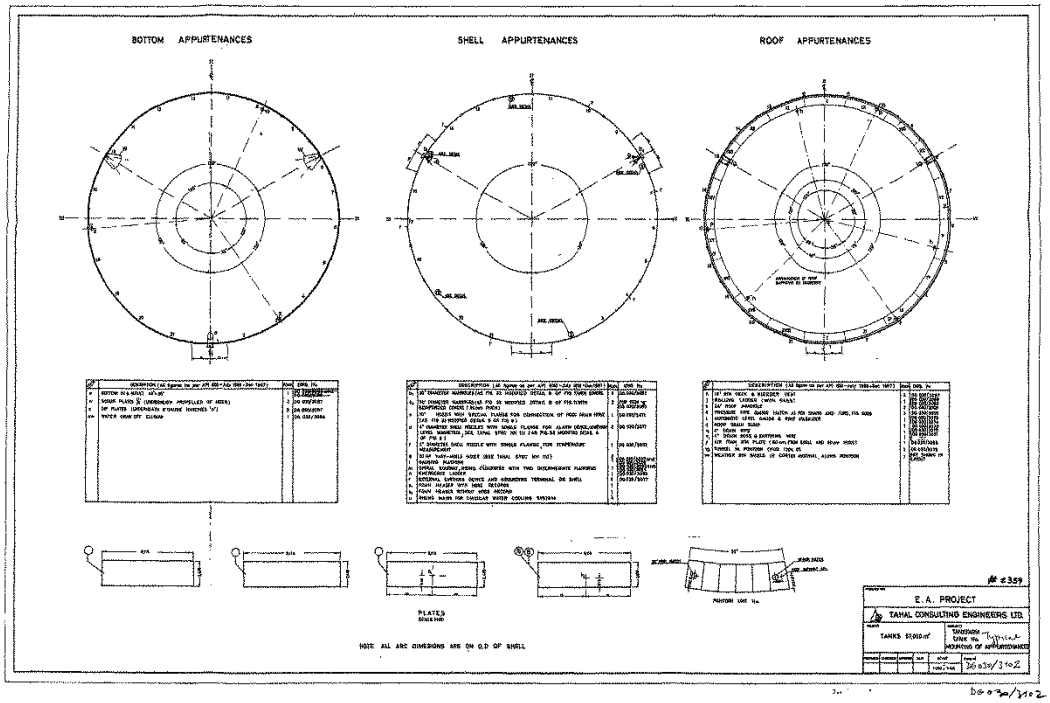
AO



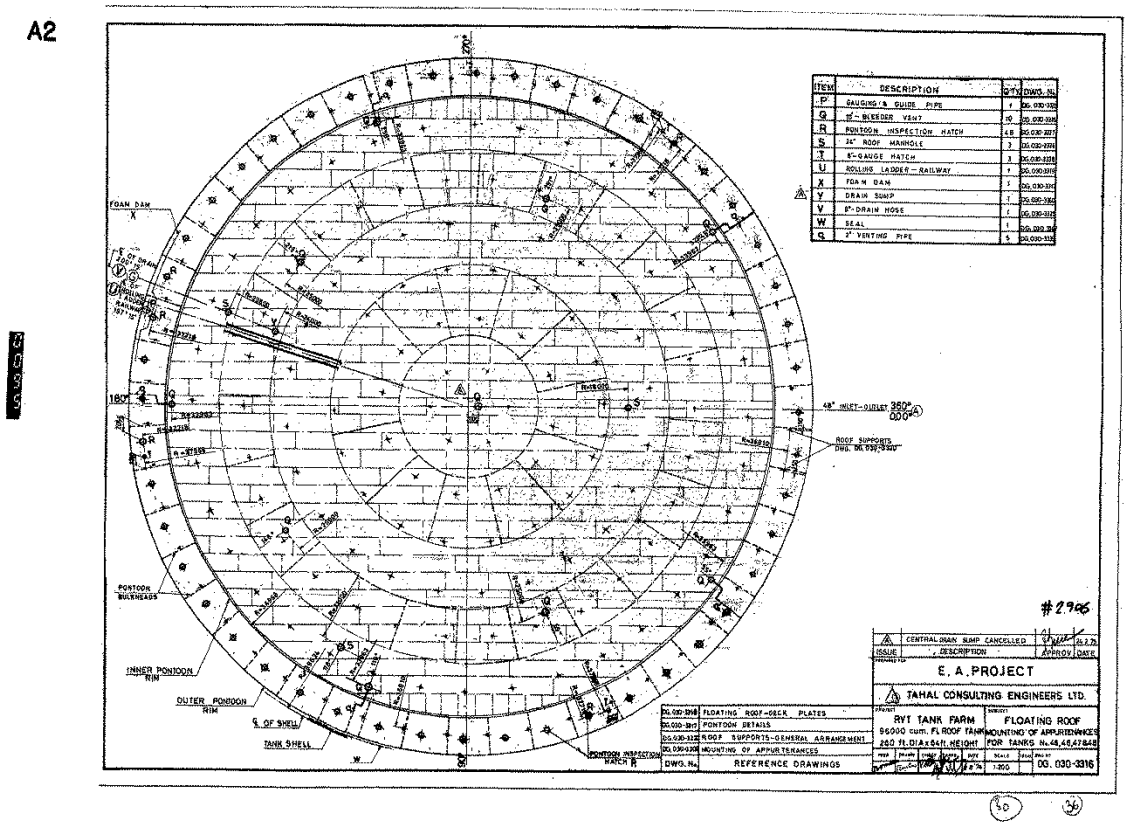
2

Appendix Q

AQ



Appendix R


A2
ITEM
DESCRIPTION
Q'TY
DWG. No.
P
GAUGING & GUIDE PIPE
Q
2" - BLEEDER VENT
R
PONTOON INSPECTION HATCH
S
24" ROOF MANHOLE
T
8"-GAUGE HATCH
U
ROLLING LADDER - RAILWAY
X
FOAM DAM
Y
DRAIN SUMP
V
6"-DRAIN HOSE
W
SEAL
Q
3" VENTING PIPE
FOAM DAM
48" INLET-OUTLET 360°
ROOF SUPPORTS
PONTOON BULKHEADS
INNER PONTOON RIM
OUTER PONTOON RIM
℄ OF SHELL
TANK SHELL
PONTOON INSPECTION HATCH R
#2906
CENTRAL DRAIN SUMP CANCELLED
ISSUE
DESCRIPTION
APPROV.
DATE
E. A. PROJECT
TAHAL CONSULTING ENGINEERS LTD.
RVT TANK FARM
96000 cum. FL ROOF TANK
260 FL.DIA x 64 H. HEIGHT
FLOATING ROOF
MOUNTING OF APPURTENANCES
FOR TANKS No.46,46,47&48
DG. 030-3316
DG.030-3116
FLOATING ROOF-DECK PLATES
DG.030-310
PONTOON DETAILS
DG.030-312
ROOF SUPPORTS-GENERAL ARRANGEMENT
DG.030-3206
MOUNTING OF APPURTENANCES
DWG. No.
REFERENCE DRAWINGS