EGPC Drilling & Workover HSE Requirements Manual

Egyptian General Petroleum Corporation

Drilling & Workover
Health, Safety and Environmental Requirements Manual

Revision no. 00
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Disclaimer: The cover photo is an EDC rig , and the pictures used in the section separators are open source images downloaded from Pexels and Adobe stock

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Revision History

Version	Revision Date	Modifier	Comments
00	25.12.2023	Preparation and review commitee	Document created and issued for use

Introduction

The Egyptian General Petroleum Corporation (EGPC) has developed a comprehensive manual for HSE (Health, Safety, and Environment) guidelines for drilling and workover operations. This manual aims to provide a framework for EGPC's contractors and employees to ensure the safety of personnel, protection of the environment, and prevention of accidents during drilling and workover activities.

The manual covers a wide range of topics, based on international best practices and is regularly updated to reflect the latest changes in HSE regulations and standards.

The EGPC's Manual for HSE Guidelines of Drilling and Workover is an essential resource for all EGPC contractors and employees involved in drilling and workover activities. By following the guidelines in this manual, EGPC can help to ensure the safety of its personnel, protect the environment, and prevent accidents.

EGPC is committed to continuous improvement of its HSE performance and is constantly reviewing and updating its HSE guidelines to ensure that they remain effective in preventing accidents and protecting the environment.

EGPC encourages its contractors and employees to provide feedback on the EGPC's Manual for HSE Guidelines of Drilling and Workover so that it can be continually improved.

EGPC Ass. Chairman for HSE Word

Dear Colleagues,

I am delighted and proud to have the opportunity to write the introduction for this Manual. It represents the culmination of several months of hard work from a dedicated team of professionals in the industry.

Their goal has been to provide the Egyptian oil and gas sector with a comprehensive approach to managing the significant risks involved in drilling and workover activities.

This Manual consolidates all the standards and guidelines that have been developed over many years of experience.

As a result, all rig operators and contractors are required to ensure a safe working environment for all drilling and workover operations.

We possess the complete collection of safety standards and guidelines for drilling and workover operations in Egypt. These regulations shall be enforced upon all rig operators, contractors, and supporting services contractors in Egypt.

I am confident that this extraordinary instance of collaboration among the members of the Egyptian rig operations safety committee will have a long-lasting effect on the petroleum industry for many years to come, possibly extending beyond our country’s boundaries in the near future.

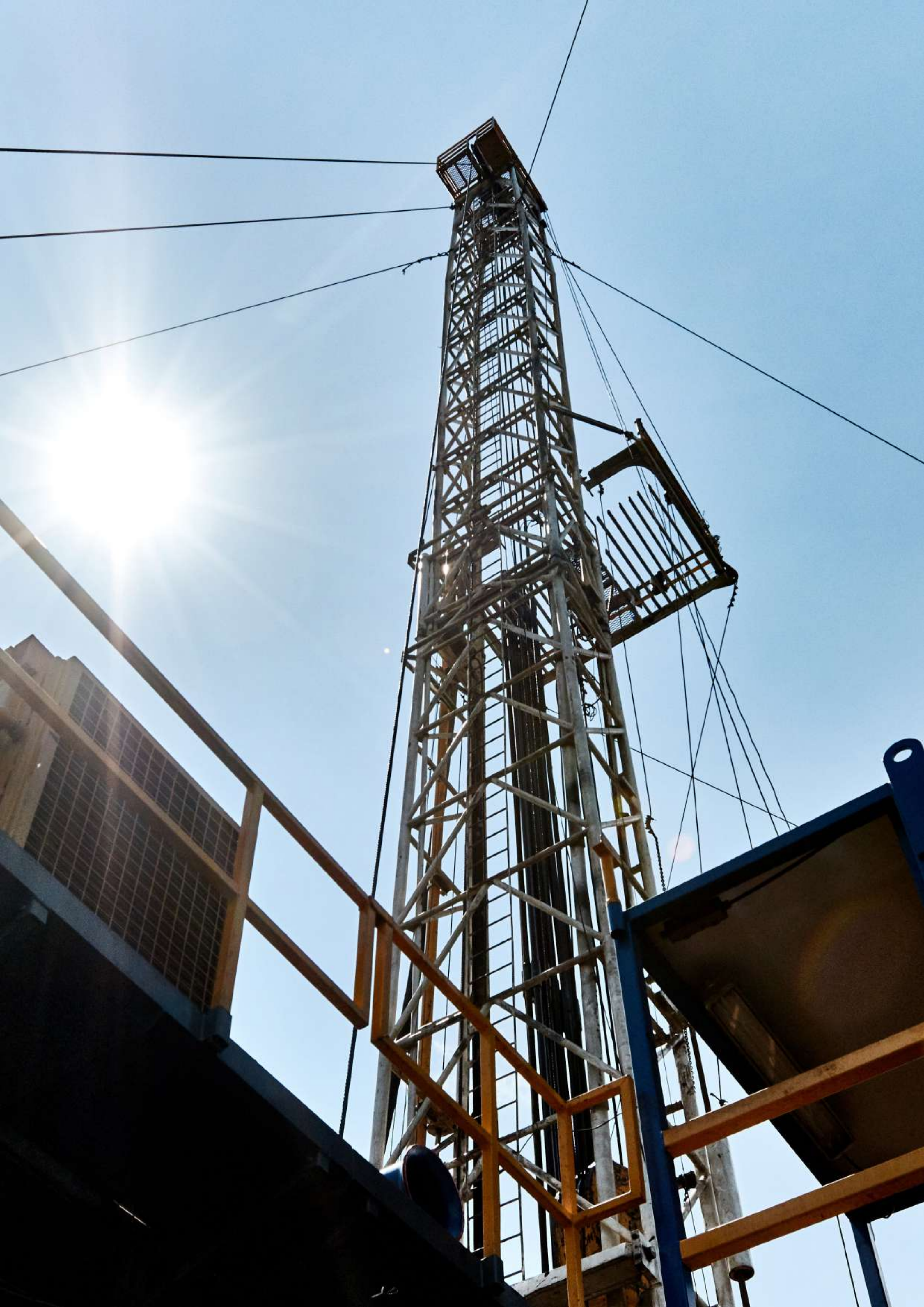
Chemist/ Ehab Mohamed Ali

Thanks and Appreciation

The preparation committee of this manual would like to express its sincere gratitude and appreciation to **Eng. Osama Kamel**, Chairman of the Board of Directors at the Egyptian Drilling Company, and **Eng. Mohamed El-Guoshey**, Chairman and Managing Director at Sino Tharwa Drilling Company.

We thank them for their crucial role in providing full support to the preparation team responsible for producing these guidelines.

Their generous contribution was invaluable in enabling us to complete this important task. We are deeply indebted to their assistance and recognize their commitment to our success.



EGPC D&WO HSE Policies

EGPC D&WO are committed to protect people and the communities in which we operate through driving environmental, health, safety and Environment excellence. Our approach includes implementing strong HSE programs and standards, reducing our HSE risks, and complying with all applicable Egyptian HSE laws

EGPC requires the active commitment to and accountability for HSE from all employees and contractors.

Line management has a leadership role in the communication and implementation of and ensuring compliance with QHSE policies and standards. We are committed to

- Protect and strive for improvement of the health, safety, and security of our people at all times
- Set quality and HSE performance objectives; measure results; and assess and continually improve processes, services, and product quality through the use of an effective management system
- Aspire to achieve an 'Incident Free environment', as a commitment to preventing injury, ill health, and protecting the environment including the prevention of pollution
- Provide sufficient information, instruction, training and supervision to enable everyone to avoid hazards and contribute to their own safety and health;
- Empower our employees to stop unsafe acts or activities and encourage the reporting of Accidents, incidents and near misses.
- Ensure effective communication of our HSE management system, including the ongoing consultation with, and participation of our employees and contractors to determine if further measures are required in terms of continual improvement.
- Ensure that all hazards and environmental aspects are identified and subsequently risk assessed. Suitable risk mitigation measures are to be adopted to ensure that we provide a safe and healthy working environment, manage our environmental impacts and reduce risks so far as is reasonably practicable
- Plan for, respond to, and recover from any emergency, crisis, and business disruption
- Communicate openly with stakeholders and ensure an understanding of our QHSE policies, standards, programs and performance; reward outstanding QHSE performance
- Improve our performance on issues relevant to our stakeholders that are of global concern and on which we can have an impact and share with them our knowledge of successful QHSE programs and initiatives.

This Policy shall be regularly reviewed to ensure ongoing suitability. The commitments listed are in addition to our basic obligation to comply with other EGPC standards as well as all applicable Egyptian laws and regulations.

Manual Scope

Introduction and Scope

EGPC drilling and workover HSE Manual provides the foundation, and serves as an administration guide, for all Rig operator and contractors management systems incorporating Health, Safety, Quality, and Environmental Protection, implemented and maintained by EGPC

The Manual described in this document applies to all EGPC-affiliated rig operators and contractors' operating management.

This Manual has been established in alignment with the International HSE and industrial standards, in addition to, the applicable HSE legislation and, rig operations HSE best practices,

EGPC will provide full support as required at the various organizational levels within all affiliated companies and rig contractors to apply this guideline effectively and successfully

Mission Statement "Rig Operators and Contractors"

All EGPC-affiliated companies and rig contractors are committed to providing optimum technical solutions, a safe operating environment, and quality service to the oil and gas industry.

Rig operators shall meet all requirements mentioned in this guideline as a minimum requirement through the dedication and teamwork of their management and employees, also they will continue working to achieve high levels of industry standards and exceeding it as possible and improving their employee's safety culture as an important target

Manual Objectives and Values

- It is the primary and continuing goal of the Ministry of Petroleum and all affiliated holding companies to protect its personnel, environment, assets, business activities, and reputation. In part, this is done by maintaining and continually.
- Improving their management systems, through taking cognizance of various International recognized codes, and standards and applying it not only for HSE but for all drilling and workover contributing factors and their related impacts, as mentioned in EGPC Drilling and workover guideline
- Each rig contractor shall provide a framework for systematically and thoroughly evaluating their performance and activities by identifying and assessing associated risks.
- Rig contractor shall also ensure that it recognizes all applicable standards, rules, and regulations
- Established by the relevant classification societies, including but not limited to, the American Petroleum Institute (API), as well as all applicable insurance warranties and obligations. In addition, the Company shall recognize all Egyptian applicable laws and regulations.
- EGPC promotes the following Operational Values to all personnel working under its affiliated companies
  - Effectively Engage Rig operators and contractors' people, processes, and systems with our operational objectives
  - Encourage "Do Safe" by understanding, planning, and doing the right thing for every task performed
  - Excel by better understanding our business to make our business understandably better
- Time and commitment are the key enablers for EGPC's safe Operational Values.
- Adequate time in support of these Operating Values shall always be provided by rig operators and contractors management and it will be an integral part of the drilling and workover HSE guidelines.
- EGPC expects affiliated companies, worksite leadership teams, supervisors, and safety leaders (wherever they happen to be) to continuously reinforce its safe Operational Values through their commitment, actions, and behaviors.
- The Operational Values above and the following principles shall provide the basis by, which all

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Section A: Administrative Requirements

A1. Abbreviations & Acronyms

EGPC

1.1. Abbreviations and Acronyms

ABS	American Bureau of Shipping
ACM	Asbestos Containing Material
ALARP	As low as reasonably practicable.
ANSI	American National Standards Institute
API	American Petroleum Institute
BE	Barge Engineer
BOP	Blowout Preventer
CPR	Cardiopulmonary Resuscitation
ECC	Emergency Control Center
D&WO	Drilling and Workover
DP	Deviation Permit
EP	Emergency Preparedness
EPD	Environmental Protection Department
ESD	Emergency Shut Down
FAI	First Aid Injury Case - Minor injury (not illness)
FAT	On-Job Fatality - An On-Job injury or occupational illness that results in Fatality
FRC	Fast Response Craft
GHG	Greenhouse Gases
GM	General Manager
GMDSS	Global Marine Distress and Safety System
HACCP	Hazard Analysis and Critical Control Point.
HSE	Health, Safety and Environment
IADC	International Association of Drilling Contractors
KPI	Key Performance Indicator
LTI	Lost Time Injury/Illness Case - An on-job injury or occupational illness that involves one or more days away from work beyond the day the injury or illness occurred
MOC	Management of Change
MODU	Mobile Offshore Drilling Unit
MOME	Management of Major Emergencies
MOT	Ministry of Transportation
MMSR	Minimum Medical Standard Requirements
MTC	Medical Treatment Injury/Illness Case - An on-job injury or occupational illness that is more serious than on-job first aid injury (FAI) or occupational illness requiring medical treatment
MVA	Motor Vehicle Accident - An MVA is any occurrence involving motor vehicle that results in death, injury, or property damage
NEC	(American) National Electrical Code

NFPA	(American) National Fire Protection Association
NM	Near Miss - Event which did not result in injury or loss, but which had the potential for injury or loss if the conditions had been slightly different (Ref. G.I.0006.004 – Section 2.0)
NTP	Night Tool Pusher
OEM	Original Equipment Manufacturer
OIM	Offshore Installation Manager
OJI	Off- Job Injury Case - An injury suffered by an employee that does not arise out of and in the course of employment and which results in death or day(s) away from work (Ref. ANSI Z16.3- – Recording and Measuring employee Off-The-Job Injury experience and G.I.6.005 – Section 3)
OPITO	Offshore Petroleum Industry Training Organization
OSC	Oil Spill Committee
PCR	Power Control Room (SCR, VFD, etc.)
PIC	Person in Charge
PTW	Permit to Work
RDI	Restricted Duty Injury/Illness Case - An on-job injury or occupational illness that results in restricted work or job transfer (Ref. G.I.6.005 – Section 3)
SCR	Silicon Controlled Rectifier
SDS	Safety Data Sheet
SMART	Specific, Measurable, Accountable, Reasonable and Timely
SME	Subject Matter Expert
SMP	Supplemental Manpower
SWL	Safe Working Load (Limit)
MOC	Management of Change
CRF	Change Request Form
CRT	Change Review Team
CIT	Change implementation Team
PHA	Preliminary Hazard Analysis
RIK	Replacement-in-Kind
AL	Action Level
dB	Decibels
STS	Standard Threshold Shift
NRR	Noise Reduction Rating

A2. Reference Materials

EGPC

ANSI NFPA-70-2023	Grounding Separately Derived Alternating-Current Systems
ANSI B 31.1 -2021	Power Piping
ANSI Z88.2 -2021	American National Standard Practices for Respiratory Protection
ANSI Z89.1 -2021	Protective Head ware for Industrial Workers Requirements
API 510 -2023	Pressure Vessel Inspection Code: In-Service Inspection, Rating,Repair, and Alteration
API 570 -2023	Piping Inspection Code: In-service Inspection, Rating, Repair, and Alteration of Piping Systems
API BULL 13C -2022	Drilling Fluid Processing Equipment
API BULL 5C2 -2021	Performance Properties of Casing, Tubing, and Drill Pipe
API BULL 5C4 -2021	Round Thread Casing Joint Strength With Combined Internal Pressure and Bending
API Q1 10 th edition 2023	Standards, codes, and best practices, guide for quality management systems in the oil and gas industry.
API RP 49 -2023	Recommended Practice for Drilling and Well Servicing Operations involving Hydrogen Sulphide
API RP 4G -2023	Operation, Inspection, Maintenance and Repair of Drilling and Well Servicing Structures
API RP 500 -2023	Recommended Practice for Classification of Location for Electrical Installation at Petroleum Facilities
API RP 510 -2023	Pressure Vessel Inspection Code
API RP 52 -2023	Recommended Land Drilling Operating Practices for Protection of the Environment
API RP 54 -2023	Recommended Practices for Occupational Safety and Health for Oil and Gas Drilling and Servicing Operation
API RP 572 -2023	Inspection Practices for Pressure Vessels
API RP 576 -2023	Inspection of Pressure Relieving Devices
API RP 7G -2023	Drill Stem Design And Operating Limits
API RP 7G-2 -2023	Recommended Practice for Inspection and Classification of UsedDrill Stem Elements
API RP 7H -2023	Drilling Machinery
API RP 7L -2023	Procedures for Inspection, Maintenance, Repair, and Remanufacture of Drilling Equipment
API RP 8B -2023	Hoisting Tool Inspection and Maintenance Procedures
API RP 8B -2023	Recommended Practice for Procedures for Inspections, Maintenance, Repair & Remanufacture of Hoisting Equipment
API RP 9B -2023	Application, Care and Use of Wire Rope For Oil Fields
API RP 9B -2023	Application, Care, and Use of Wire Rope for Oil Field Service
API SPEC 13A -2023	Oil Well Drilling Fluid Materials
API SPEC 4A -2023	Steel Derricks
API SPEC 4E -2023	Drilling and Well Servicing Structures

API SPEC 6A -2023	Wellhead Equipment
API SPEC 7 -2023	Rotary Drilling Equipment
API SPEC 7 B-11C -2023	Internal Combustion Reciprocating Engines For Oil Field Service
API SPEC 8 -2023	Drilling and Production Hoisting Equipment
API SPEC 9A -2023	Wire Rope
API STD 53 -2023	Blowout Prevention Equipment Systems for Drilling Wells
API STD 653 -2023	Tank Inspection, Repair, Alteration, and Reconstruction
ASME B 30.10 -2021	Hooks
ASME B 30.11 -2021	Monorails & Underhung cranes
ASME B 30.23-2005	Personnel Lifting Systems Safety Standard for Hoists
ASME B 30.7-2011	Winches
ASME B 30.9 -2021	Slings
ASME SE 709 Sec V -2022	Non Destructive Examination
ASME VIII -2023	Guidebook for the Design of ASME Section VIII Pressure Vessels
ASSE Z 359.14 -2023	Safety Requirements for Self-Retracting Devices for Personnel Fall Arrest and Rescue systems
Aviation Dept.	Rig/Vessel Helideck Requirements & Operation Guidance
BS 2853:2011	Specification for the Testing of Steel Overhead Runway Beams for Hoist Blocks
BS 3956-5 :2018	Fork Arm for Fork Lift Trucks – Guide for Inspection
BS 5655-10 :2009	Testing and Inspection of Electric and Hydraulic Lifts
BS EN 14502-1 :2015	Cranes - Equipment for the Lifting of Persons Part 1: SuspendedBaskets
BS EN 81-1 :2019	Safety Rules for the Construction and Installation of Lifts - Part 1:Electric Lifts
BS EN 81-2 :2018	Safety Rules for the Construction and Installation of Lifts
BS ISO 18893:2004	Mobile Elevating Work Platforms – Inspections
BS ISO 5057:1993	Industrial Trucks – Inspection and Repair of Fork Arms
DS-1	Drill Stems Design and Inspection.
F2413-11 & F2412-11	Standard Specification for Performance Requirements for Foot Protection and Standard Test Methods for Foot Protection.
IADC	International Association of Drilling Contractors
IADC	IADC Drilling Manual
IEC 60079-17 :2013	Explosive Atmosphere - Part 17: Electrical Installations Inspectionand Maintenance
IEC 60947-2 :2016	LV Switchgear and Control Gear
IEEE STD 1458-2005	RP for the Selection, Field Testing and Life Expectancy of MoldedCase Circuit Breakers for Industrial Application
IEEE STD 43-2000	RP for Testing Insulation Resistance and Electric Machinery
ISO 2415: 2004	Forged Shackles for General Lifting Purposes

A.2. Reference Materials

ISO 45001:2018	Occupational health and safety management system
ISO 9001:2015	Quality management system
ISO 9712 :2012	Qualification and Certification of NDT Personnel
MARPOL 2017	International Convention for the Prevention of Pollution from Ships. The latest version
MODU	Code Applicable to the MODU. The latest version
NACE MR0175 :2021	Metals for Sulphide Stress Cracking and Stress Corrosion Cracking Resistance in Sour Oilfield Environments
OSHJ-CoP-01	Risk Management and Control
OSHJ-CoP-04	Work at Height Safety
OSHJ-CoP-13	Safe Work Equipment
OSHJ-CoP-15	Employee Welfare and Wellbeing Version 1 Rev 0
OSHJ-GL-11	Safety in Warehousing
OSHJ-GL-15	Safety in Heat
PVIC	Pressure Vessel Inspection Code. Safe Practices in Drilling Operations.
SAE J 2228 _202305	Kingpin Wear Limits – Commercial Trailers
SOLAS 2020	Safety of Live at Sea

A3. General Safety Rules

EGPC

3.1. Scope

The regulations that follow are designed to keep the organizations' workers safe. Rules violations may result in disciplinary action. This procedure applies to EGPC D&WO Contractors and Service Providers.

3.2. Rules

- All Work-related injuries/illness or vehicle collisions, no matter how slight, shall be reported immediately to the work supervisor.
- All fires, spills, and releases, no matter how small, shall be reported immediately to the work supervisor.
- Immediately report any unsafe conditions, practices, near misses, or incidents to the work supervisor.
- Horseplay and fighting are safety violations. Supervisors allowing these acts as well as the violators are subject to disciplinary action.
- All personnel (drivers and passengers) shall wear seat belts at all times. The number of vehicle occupants will be based on the number of seat belts available.
- Smoking is only allowed in designated smoking areas. This includes the use of vape pens and electronic cigarettes.
- Before beginning work or if the location or conditions change, identify the risks and hazards associated with the jobs.
- Permit to Work (PTW), deviation permit, and risk assessment shall be issued before a safety device is removed from service and/or defeated, the appropriate supervisor and affected parties shall be notified, the device shall be tagged and the action documented.
- Unauthorized removal of isolations or operation of equipment with a "Danger Do Not Operate" tag is forbidden.
- Before operating any machinery or switch gear, all safeguards, switches, and alarms shall be in place and functional.
- All block valves on pressure relief systems in service shall be locked or sealed open.
- Finger rings and other jewelry, as well as loose-fitting clothing, long hair (head and facial), and other loose accessories, are not permitted to be worn when working on rig sites.
- Do not apply compressed air, other gases, or high-pressure wash-down guns to yourselves or others.
- Climbing ladders requires both hands. The usage of railings is required when going up and down stairs.
- When descending ladders, the employee shall always face the ladder.
- Running in work areas is prohibited.
- Use the correct tool for the task, all tools and equipment must be well maintained. Homemade tools are prohibited.
- Erect barricades/flagging around areas of hazardous work, such as holes in decking and work areas, trenches, road crossings and overhead hazardous work.
- Climbing or standing on equipment, piping or valves to do work is prohibited. Approved scaffolding, work platforms, personnel lifts, or ladders with full body safety harnesses shall be used.
- All fire extinguishers and other emergency equipment shall be in good condition, inspected at least monthly, and kept clear of any obstructions. Accidental discharge or use of firefighting equipment must be reported to the supervisor immediately.
- Manual lifting procedures must be utilized correctly at all times. If the load is too heavy, seek assistance from the work supervisor or use a mechanical lifting equipment.
- Proper PPE shall be used according to the related job such as safety eyewear, hard hats, gloves, and safety footwear etc. Metal hard hats are prohibited.
- When handling or mixing chemicals, chemical gloves, goggles, apron and appropriate respirator must be used (reference the SDS). In addition, when mixing caustics, a full face shield and goggles are required. Anytime a face shield is required, goggles shall also be worn.
- Hearing protection be worn when entering high noise areas 85 dB or higher.

- All personnel are empowered and accountable to STOP WORK if they observe; any defective equipment, machinery, hazardous condition or unsafe work practice, and immediately report the hazardous condition or work practice to their supervisor. No further activity shall be conducted until a safe working environment exists.
- Work or walk under a suspended load is prohibited.
- Full body safety harnesses with properly secured lanyards shall be worn when working at heights above 4 feet (1.2 meters). The lanyard shall be connected to an anchor point all the time. Suspension Trauma devices shall be provided on all full-body harnesses to be used to prevent blood circulation issues in case of a free fall, and also employees are required to be trained on how to use them. In case of a free fall the safety harness shall be disposed.
- Riding the elevators and cathead lines is not permitted.
- The use of one tong and the rotary to trip the pipe is prohibited.
- All personnel shall participate in the emergency drills.
- HSE Meetings: all personnel shall attend the HSE meetings conducted in the D&WO operations as follows:
  - Weekly HSE Meetings: All Drilling Contractor and Service Companies supervisory and crew personnel and sub-contractors/third-party companies personnel who are present at the rig.
  - Pre-Tour HSE Meetings: All Drilling Contractor and Service Companies supervisory and crews' personnel, and sub-contractors/third party companies' personnel who are involved in the current operation.
  - Pre-Job HSE Meetings: All Drilling Contractor and Service Companies supervisory and crews' personnel, and sub-contractors/third party companies' personnel who are involved in the job. The company representative who is conducting any particular job must lead the Pre-Job Meeting.

Note:

Meetings shall be documented with main subjects discussed and attendance list will be signed off.

- Anyone taking prescription drugs must report this to the Rig Doctor / Medic when arriving on the rig.
- A "tail rope" must be used when moving pipe, tubing, etc., in from the V-door.
- All personnel arriving to the rig location shall report to the person in charge (PIC) for safety orientation, fill out health questionnaire and registration.
- Only company transportation / rented vehicles by the drilling contractor and Service Company itself shall be used to go to work locations, rig camps and heliport bases. No personal owned vehicle shall be used to travel to and from Rig Locations or Aviation Heliports.
- Non-approved electrical/electronic devices (e.g., cellular phones, pagers, cameras, and instruments) shall not be used in classified areas unless properly permitted. Drilling Contractors shall have a study and map with the classified areas aligned to API RP 500 and API RP 505.
- Maintain good housekeeping in in the workplace all times.
- Regular rig crews shall arrive and depart the rig location during daylight hours only, using the Contractor's provided transportation.
- Drilling Contractors and Service Companies are to perform a pre-job safety meeting, Job Safety Analysis (JSA), and job-specific Risk Assessment jointly before embarking on any two-party activity. This is to ensure proper hazard identification, establish clear roles and responsibilities, and agreeable effective communication methodology.
- Drilling Contractors and Service Companies shall follow the Lifesaving Rules established by IOGP to prevent incidents.
- Drilling Contractors and Service Companies must have a STOP WORK AUTHORITY (SWA) Programmed in place to ensure that all employees and subcontractors are aware that they have the Authority and Accountability to stop any work that they consider unsafe and has the potential to injure personnel, damage equipment, or harm the environment, without fear of retaliation.
- Management and Supervisors shall demonstrate visible leadership on this matter, and encourage employees permanently to exercise the STOP Work Authority when required.
- Periodic SWA Drills shall be included in the program with different operations and including the

participation of third party and sub-contractor employees.
- A copy of the SWA Program shall be provided to Proponent Department for implementation verification.

A4. Roles & Responsibilities

EGPC

4.1. Scope

This procedure applies to all contractors and service companies to define responsibilities and accountabilities during all phases of any drilling or workover operation.
The following minimum guidelines are provided to aid the Rig Operators and Service Companies in meeting their responsibilities and assist them in complying with the requirements of EGPC.

4.2. Guidelines

4.2.1. The rig operators and service contractors shall:

- Hold responsibility for preventing accidental losses, protecting company interests and resources, and avoiding any environmental contamination.
- Establish a written HSE manual/programs and plans that fulfill all the requirements stated in this Manual.
- Establish a written bridging document to ensure that:
  - Operations or projects are planned and conducted in line with both organizations' HSE MSs.
  - The organizations' HSE MSs do not conflict with each other.
  - Where aspects of both organizations' HSE MSs are jointly used, the interfaces are well-defined and operable (that is, the identification of which components of the individual organizations' HSE MSs will be used during the project, contract, or operation).
- HSE program for frequent and regular inspections of the equipment, materials, and accommodations by competent persons designated by the Rig Operator or Service Company Management. This inspection shall be completed periodically or at least annually and submitted to their management for concurrence and follow-up.
- Hold responsibility to verify that all personnel arriving on location register and receive proper training.
- Be thoroughly familiar with the drilling or workover program. The rig operator Representative (Company Man) shall inform the rig crew of any potential adverse conditions (For example: lost circulation zones, high reservoir pressure, high H2S concentrations) that require special safety precautions, training, equipment, or additional personnel.
- Identify the "Smoking Permitted" areas around each rig location, using risk assessment, and should have clear instructions for those areas. All other areas on the location shall be considered as "Non-Smoking" areas and shall be marked accordingly. Smoking shall be closely controlled throughout the rig location.
- Take all reasonable safety precautions to prevent oil spills or pollution both onshore and offshore operations. If an accidental spill or discharge does occur, every effort shall be made to:
  - Protect human life, including both employees and the public,
  - Minimize the impact on the environment.
- Immediate reporting of spills is required to the Company representative for containment and reporting compliance.
- Adequately train each of their employees in the recognition and avoidance of unsafe conditions and all Company HSE standards applicable to his work environment. They shall also adequately train their employees in methods to control or eliminate any hazards or other exposures that may result in injury or illness (hazard recognition program).
- implement a HAZCOM Program to ensure that employees who are required to handle or use poisons, caustics, acids, and other harmful substances, are adequately trained regarding safe handling and use.
- Discuss the potential hazards, personal hygiene, and required personal protective equipment before their employees handle any harmful materials. In all areas where hazardous chemicals are being stored or utilized.
- Adequately maintain eyewash and emergency shower station, as required by the Material Safety Data Sheet (SDS), for washing chemical spills.

Note:

All SDSs shall be kept and maintained at each Chemical/Hazardous material storage area in both Arabic and English at a minimum.

- Allow only those qualified & competent personnel with certified training to operate equipment and machinery.
- Ensure that all certified operators have copies of their certifications and licenses in their possession. The rig shall also maintain copies of all operators' certifications and licenses. Each rig shall maintain a rig-specific training matrix that shall be updated.

4.2.2. Rig Operator's providing offshore rigs shall:

- Verify that their rigs are kept in compliance with all applicable maritime/MODU standards of the country in which the rig is registered as well as any applicable laws and regulations of Egypt.
- Verify that all required (Marine and Vessel Flag State) certifications are current and that re-certification inspections are completed by an approved certification authority before the expiration of the existing certificate.
- Include any special or unusual towing characteristics of an offshore rig included in the operating instructions and communicate to the towing vessel operators before towing operations begin.
- Ensure that all navigation and transit lights are operable and used as required by International Rules and Regulations for Aids to Navigation.

If a Rig Operator's or Service Company's HSE requirement conflicts with a Company's requirement, the most stringent requirement shall apply.

A5. HSE Organization

EGPC

5.1. Scope

All drilling contractors, Operators, and service companies operating in Egypt are required to establish an autonomous Health, Safety, and Environment (HSE) department, which will directly report to the managing director/chairman of the organization.

5.2. Purpose

This procedure is intended to identify the specific health and safety roles and responsibilities within the organization, as well as the channels of communication and chain of command for reporting.

5.3. HSE Organizational Structure

An effective HSE organizational structure shall clearly define roles and responsibilities, ensuring that all personnel are accountable for HSE performance. The structure typically includes the following elements:

5.3.1. Managing director/chairman

The managing director/chairman is responsible for:

- Setting the overall HSE policy and providing the necessary resources for HSE management.
- Ensuring that all necessary resources are provided to ensure the safety of employees and that all potential risks are minimized to protect them.
- Overseeing the overall HSE performance within their designated jurisdiction.

5.3.2. HSE department Manager/Director

Responsible for developing, implementing, and maintaining the HSE management system. And must hold a senior management position within the organization.

5.3.3. HSE Coordinators

- Shall assist the HSE manager in implementing HSE programs, conducting audits, and investigating incidents.
- Are responsible for liaising between the employees and the company regarding any occupational or environmental issues and devising ways to address these issues. Shall also promote ways to prevent or mitigate current problems.

5.3.4. HSE Engineers

Site HSE representatives are responsible for day-to-day HSE activities on drilling and workover sites, to formulate, implement, communicate and coordinate environmental, health, and safety programs for the organization. they shall, Also provide technical and administrative direction in regard to all HSE matters.

5.4. HSE Engineer

5.4.1. Job Summary

All drilling contractors shall provide a dedicated, qualified, and professional HSE engineer to work at the rig site twenty-four hours, seven days a week basis to perform various safety duties.

The HSE Engineer shall:

- Report directly to the drilling contractor's HSE department and act as a visible supervisory Health, Safety, and Environment presence during operations on the installation.
- Act as an advisor to the senior rig personnel regarding conformance to the drilling contractor management system and EGPC D&WO HSE requirement at the installation.
- Provide ongoing independent updates to the drilling contractor's top management regarding the overall condition of the HSE management system's effectiveness and implementation on the installation.

- Monitor and perform all HSE training as directed by the drilling contractor to the extent of personnel knowledge/qualification and ensure that HSE training-related goals are communicated to employees assigned to the respective installation.
- Monitor conformance to the drilling contractor and EGPC policies, procedures, and all appropriate HSE standards.

5.4.2. Qualification

In addition to the training required in this manual, The HSE engineer shall have the following training and competencies:

- Engineering / Science Bachelor degree or equivalent.
- NEBOSH general certificate
- Formal Root Cause Analysis (Tap Root the preferred system)
- Certified first aid and Basic Life Support
- General HSE Train The Trainer (T.T.T)
- 1 Year Experience in the oil & gas Industry (Drilling industry preferable) or equivalent operational industry. Fresh graduate Engineers may be accepted as Night HSE engineers for one year before graduating to the Day HSE engineer position.
- Excellent communication skills
- Computer literate with proficiency in the Microsoft Office suite of programs.
- Excellent knowledge of HSE practices common to the drilling contractor and the industry.

5.5. Essential Functions

- Independently monitor and observe ongoing rig operations daily with a focus on conformance to the drilling contractor and EGPC policies and procedures.
- Report any non-conformances or violations, incidents, or any HSE-related issue immediately to the drilling contractor's HSE department.
- Plan and facilitate weekly HSE meetings
- Communicate all Safety Alerts to all crew members
- Facilitate the permit to work package process (PTW, SJA, PJSM, checklists...)
- Ensure all incidents are reported correctly on time and participate in the incident investigation.
- Review all behavior-based safety (BBS) observation cards generated on the installation and monitor the effectiveness of the program.
- Follow up on all high potential unsafe acts and conditions.
- Perform HSE audits and inspections and report trends to rig management.
- Monitor the Short Service Employees (SSE) program to ensure implementation.
- Perform Orientation of personnel arriving at the installation following policies and procedures.
- Perform all required rig-based HSE training to the extent of personal qualification.
- Ensure installation critical equipment is properly maintained as directed by the Original Equipment Manufacturer (OEM) and drilling contractor Preventive Maintenance Program (PMS).
- Spot check a minimum of 25% of the PTW package produced daily.

A6. WELFARE MANAGEMENT

EGPC

6.1. Scope

This procedure defines the EGPC minimum acceptable requirements of the Occupational Safety and Health System.

6.2. Purpose

Workplace welfare facilities are essential for a safe and healthy work environment. Rig contractors and services companies must provide employees with the facilities to stay safe, healthy, and well.

Rig contractors shall comply with these requirements **without conflict with any relevant national laws, building codes and standards**, they also may apply better/ higher practices higher than, but not less than those mentioned in this document.

6.3. Definitions

6.3.1. Risk Assessment

The systematic identification of workplace hazards and evaluation of the risks associated. This process considers existing control measures and identifies and recommends further control measures where required.

6.3.2. Wellbeing

An employee is in a state of being comfortable, healthy, or happy.

6.3.3. Workplace

A place that the rig contractors and services companies allocates for the performance of the work. This term shall also include the employees' resting places, their accommodation, and similar places the rig contractors and services companies allocates to employees.

6.3.4. Welfare Facilities

Include changing, washing, rest, eating, and toilet facilities that are clean and necessary for the well-being of employees.

6.3.5. Workstation

An area with equipment for the performance of a specific task, such as a computer station or a specific location on an assembly line, control room, etc.

6.4. Responsibilities

6.4.1. Rig contractors' Responsibilities

- Ensure the workplace has adequate welfare facilities for employees and others using the workplace;
- Ensure resources are available for the provision and maintenance of the welfare facilities;
- Assess and identify risks to employees' well-being and introduce control measures to eliminate or reduce those risks;
- Ensure the workplace has safe access and egress to and from the workplace.
- Rig Operatowr's PIC and HSE Shall verify the implementation of all the above-mentioned responsibilities. before spud in

6.4.2. Employees' Responsibilities

- Not endanger themselves or others;
- Follow precautionary control measures to ensure work activities are performed safely and without risk to health;
- Cooperate with the rig contractors and services companies and support the safety and health policies and procedures of the rig contractors and services companies;

- Report any activity or defect relating to employee welfare and well-being which they know is likely to endanger the safety of themselves or that of any other person.

6.5. Requirements

The rig contractors and services companies shall comply with the requirements of the Occupational Safety and Health System in the EGPC D&WO manual concerning employees' welfare and well-being.

6.5.1. Risk Assessment

- The rig contractors and services companies shall provide welfare facilities based on Egyptian law & EGPC D&WO requirements but is not restricted to these requirements. Risk assessment of the workplace may require the rig contractors and services companies to add welfare facilities above these requirements, depending on the size, distribution, layout, and work activities of the rig contractors and services companies.
- All aspects of employee welfare and well-being must be risk assessed and any control measures identified that can eliminate or reduce risks to employees implemented. The rig contractors and services companies shall assess risks to welfare, examples include but are not limited to:

6.5.1.1. Housekeeping

- Assess the number of employees utilizing various areas, shift patterns used, the type of work activities being conducted, how to keep floors and pedestrian routes clear of obstructions and liquid spills, rest areas, changing rooms, and how often they need to be regularly cleaned, and how any waste materials generated are safely handled, stored, transported and disposed of toilets and washing amenities
- Assess the adequacy and number of toilets and washing facilities for the number of employees.
- The rig contractors and services companies shall ensure:
  - Every workplace, including furniture, furnishings, fittings, toilets, washrooms, rest and break rooms, and communal spaces are kept clean and in a sanitary condition.
  - The prompt removal of waste materials as necessary to prevent the build-up of waste from causing safety and health issues.

6.5.1.2. Drinking water

Assess the amount of water employees require for working at certain times of the year, the distribution of employees and the work activities they are undertaking, and how to supply water to employees.

6.5.1.3. Access and egress

Assess the adequacy of not just how employees and others enter and leave premises in normal conditions and emergencies and consider how people work and move through the workplace. Such as, can doors open in the direction of travel, can people see through doors when opening them and are emergency exits clearly identified.

6.5.1.4. Workstations

It is essential for rig contractors and services companiess to acknowledge that their employees are their most valuable asset. Therefore, the welfare and wellbeing of employees should be a top priority for any rig contractors and services companies. This means that all workstations must be suitable for the employees and the nature of their work.

This includes the size of the workstations they work in, whether are they sufficient in size for the work activities they perform, suitably ventilated, and provided with adequate lighting.

6.5.1.5. Heating, Ventilation and Air Conditioning (HVAC)

- Workplaces & accommodations shall be adequately ventilated with fresh clean air which should be drawn and filtered from a source that is not contaminated by fumes, gases, dust, smells, or chemicals.

- Ventilation should also remove excess heat and humidity, provide a comfortable working temperature without causing draughts, and be regularly serviced and maintained.
- Employees working outdoors or in work environments indoors that generate high levels of heat, such as foundries or kitchens, are at risk from high air temperatures or, exposure to high thermal radiation or, high levels of humidity, and should be provided with a cool resting area.
- Employees working outdoors in heat must be provided with a cool resting area.

6.5.1.6. Lighting

- Lighting shall be sufficient to enable people to work and move about safely within the workplace. It needs to allow employees and others to carry out their work effectively, without adopting awkward postures or straining their eyes to see.
- Some tasks may require local lighting to be provided at individual workstations, in addition to general lighting, or require different lighting at different times during the day or if working during the night.
- Assess the type of work activities being undertaken, what the work involves, the availability of natural lighting, and artificial lighting, and the employees undertaking the activities.

6.5.1.7. Room Dimensions

- The volume of the room, when empty divided by the number of people normally working in it should be at least 11 cubic meters. 11 cubic meters is a minimum space requirement and may be insufficient in some places depending on the layout, contents, and the nature of the work.
- Employees must be able to leave workstations quickly in an emergency.
- If work can or must be done in a seated position, seats or chairs must be provided and suitable for the employees using them and for the work being done.
- Seating shall provide adequate support for the lower back, and footrests provided for employees who cannot place their feet on the floor.

6.5.1.8. Maintenance

- The rig contractors and services companies shall ensure that within the workplace certain equipment, machinery, devices, and systems are maintained to preserve the safety, health, and well-being of employees.
- Regular maintenance is required for ventilation systems, machinery, equipment, and devices that would cause a risk to safety, health, and welfare if a fault occurred; and equipment and devices intended to prevent or reduce safety and health risks. Maintenance requirements are usually specified in the manufacturer's manual.
- The rig contractors and services companies shall retain maintenance records.

6.5.1.9. Floors and Pedestrian Routes

- The rig contractors and services companies shall ensure there are sufficient pedestrian and vehicle routes, of sufficient width and headroom to allow employees and vehicles to move safely.

Note: Pedestrian and vehicle routes include any stairs, fixed ladder, doorway, gateway, loading bay, or ramp.

- Floors and vehicle routes shall be sufficiently strong enough for the loads placed on them and the vehicles expected to use them. The surfaces must not have holes, be uneven or slippery, and kept clear of obstructions to prevent slipping and tripping.
- Restrictions shall be clearly indicated, where sharp or blind bends are unavoidable or vehicles need to reverse. Measures such as one-way systems, visibility mirrors, and speed limits were introduced.
- Screens shall be provided to protect employees who have to work where they would be at risk from exhaust fumes, or to protect employees from materials likely to fall from vehicles.
- Additional measures need to be taken where pedestrians have to cross or share vehicle routes. These include the marking of routes, and provision of crossing points, bridges, subways, and barriers. Stairs shall have handrails at an appropriate height to assist people when ascending and descending the stairs. Staircases with openings on either side shall be provided with a top

and middle guardrail.
- Loading bays shall have at least one exit point from the lower level or a refuge shall be provided to avoid people being crushed or trapped by vehicles. Where vehicles offload by tipping into a pit or similar place, and vehicles or persons could fall into it, barriers and wheel stops shall be provided.

6.5.1.10. Falls and Falling Objects

- The rig contractors and services companies shall ensure a high standard of protection is in place to prevent employees from falling from heights and protect employees from objects falling onto them.
- Materials and objects need to be stored and stacked in such a way that they are not likely to cause injury. Storage racking and shelving need to be of adequate strength and stability for the loads to be placed upon it.

6.5.1.11. Transparent or Translucent Doors, Gates or Walls and Windows

- Windows, transparent or translucent surfaces in walls, partitions, doors and gates should be made of safety materials or be protected against breakage. If there is a risk of employees coming into contact with it, they shall be marked or incorporate features to make it apparent that it is not a pedestrian route.
- Openable windows, skylights and ventilators should be capable of being opened, closed or adjusted without exposing any employees to risks of safety and health. Windows and skylights shall be designed so they may be cleaned without risk to safety and health.
- Doors and gates should be suitably constructed and fitted with safety devices if necessary.
- Doors and gates that swing both ways and conventionally hinged doors on main pedestrian routes shall have a transparent viewing panel.
- Power-operated doors and gates-if available-shall have safety features to prevent employees being struck or trapped and, where necessary, shall have a readily identifiable and accessible control switch or device so that they can be stopped quickly in an emergency.

6.5.1.12. Escalators and Moving Walkways

Escalators and moving walkways must function safely be equipped with necessary safety devices and be fitted with one or more emergency stop controls that are easily identifiable and easily accessible to users.

6.5.1.13. Toilets and Washing Rooms

- The rig contractors and services companies shall provide employees with suitable and sufficient toilets and washing facilities.
- There should be, at a minimum one toilet and wash basin for every 8 employees and if required the appropriate number of showering facilities required. In all cases, independent facilities must be provided for men and women.
- The rig contractors and services companies shall make arrangements for people of determination to access toilets and washing facilities easily. Washing facilities must have hot and cold water, soap, clean towels, or other means of cleaning or drying and must be regularly maintained and cleaned.

6.5.1.14. Drinking Water

- The rig contractors and services companies is responsible for ensuring that all employees in the workplace have access to an adequate supply of drinking water.
- To determine the required supply of drinking water, a risk assessment should be conducted considering the environment in which the work is being carried out, the nature of the work activities, as well as the weather, and the time of year.
- Drinking water shall be provided via bottled water and with a suitable amount of cups or a water dispensing system that is regularly cleaned, serviced, and filters replaced according to the manufacturer's recommendations.
- The rig contractors and services companies shall ensure that regular and routine cleaning and disinfection of all potable water storage tanks whether fixed or portable, shall be adequately

cleaned at a minimum of once every 6 months.

6.5.1.15. Changing Rooms

The rig contractors and services companies shall provide suitable changing rooms for employees to change into and out of work-related clothing. They must ensure the employees' privacy and provide secure storage of employees' personal and work-related clothing.

6.5.1.16. Rest Areas

- The rig contractors and services companies shall provide rest areas, with sufficient seating and large enough for the number of employees likely to use them at any time.
- Rest areas shall be provided for new and expectant mothers and be close to toilets and washing facilities.

6.5.1.17. Eating Areas

- It is important to provide suitable and sufficient facilities for employees to eat meals while at work. This is especially important in areas where food might be likely to become contaminated.
- To ensure that the eating areas (such as canteens and pantry areas, mess halls) are suitable for use, they should have sufficient seating, tables, and facilities for eating meals. It is also important to keep these areas clean and hygienic. Additionally, these eating areas should not be designated as areas where personal protective equipment needs to be worn.

A7. Communications

EGPC

7.1. Scope

This procedure applies to all events occurring at all the organization's locations & Units. It applies to all EGPC employees, contractors and visitors who are involved in drilling and workover relevant activities.

7.2. Purpose

To ensure that operational and HSE matters are communicated to all personnel during organization unit operations.

7.3. Drilling /WO Communications Means

7.3.1. Communication Requirements

- Reliable radio and telephone communications must be maintained at all times between the rig (onshore/offshore), and the operations base.
- Offshore rigs must also be able to continuously communicate with other rigs, helicopters, and vessels in the vicinity.
- Each offshore and land rig and Rig less Operations must conduct an initial survey to verify that all working areas are covered by the intercom system.
- Inspections must be carried out after each rig move to ensure that all speakers and all communications means are working and messages are clear.

7.3.2. Intercom System

- Offshore rigs must be equipped with an internal multi-channel (minimum 4 channels) Gai-Tronics or Drilling & WO approved equivalent communications system, powered by a UPS power source.
- The system must have sufficient stations and speakers to contact all operational areas of the rig.
- Acoustic cabins must be provided in all high-noise areas.

7.3.3. Alarm System

- Every offshore/onshore rig must be equipped with an integrated alarm system capable of providing a minimum of three (3) separate and distinct alarm signals (i.e., Abandon, Combustible Gas/Fire, and H2S), which shall be audible throughout the entire rig, exceeding the high noise level at rig site.
- In high-noise areas, visual alarm signals (strobe lights) must be provided in addition to the audible alarms.
- The Rig Operator must ensure that all visual warning signals are readily visible in all work areas and are not obstructed or hidden by equipment, machinery, or structure.

7.4. Internal communications:

The drilling rig contractor and service companies shall establish a minimum level of internal communications, including but not limited to:

- Risk assessments
- JSA (Job safe Analysis)
- Policies & procedures
- HSE Alerts
- HSE Bulletins, Campaigns and safety tips
- Investigation reports
- MEMOs
- Annual QHSE plan
- Organization chart
- Daily HSE morning report
- Daily STOP cards sheet

- Weekly communications included but not limited to Weekly Inspections, Weekly HSE Meeting
- Weekly HSE Audit Plan
- Monthly communication included but not limited to Monthly Inspections and Monthly Meetings
- Outstanding tracking sheet
- Updates of annual QHSE plan
- Non-conformance tracking sheet
- MOC tracking sheet

7.5. External communications:

Each rig contractor shall communicate the required communications, including but not limited to:

- Monthly HSE performance including leading and lagging indicators to EGPC.
- Incidents Investigation Reports to EGPC
- Statistical report for occupational safety and health to Labor office.

EGPC will send the HSE communications to all drilling contractors and service companies which may include but are not limited to:

- Policies & procedures
- General instructions
- HSE alerts
- HSE Bulletins and Annual Campaigns program

A8. HSE Orientation

EGPC

8.1. Scope

Work Site Orientation applies to all EGPC employees, contractors and visitors who are involved in any drilling and workover Sites

8.2. Purpose

It's crucial for all personnel to be familiar with their workplace, including its nature, hazards, and controls. As a result, visitors must be informed about general instructions concerning living quarters, emergency exits, emergency signals, and the location of first aid stations before starting work.

8.3. Rig/MODU HSE Orientation/induction structure

- Personnel shall sign a declaration form stating that they have received rig orientation.
- The orientation shall include:
  - Fire and Emergency Station Assignments and Escape Routes.
  - Room Assignment — including bunk card review
  - Review any rig-specific safety policies
  - Classification of hazardous areas
  - PTW system
  - DROPS prevention program
  - Medications
  - Safety equipment layout
  - Welfare facilities available
  - Security
  - Environment. Protection
  - Safety observation Reporting
- All personnel shall be:
  - Aware of rig/ location evacuation procedures.
  - Aware of the location of Lifeboat Stations and Assignments.
  - Able to identify emergency signals and state their assignments.
  - Aware of the drilling contractor's Hazard Observation Program.
  - Aware of H2S risks and precautions.
  - able to demonstrate their understanding of their responsibilities toward safe working practices
  - Able to demonstrate their understanding of when a Permit to Work and Risk Assessment is required.
  - Be aware of mobile phone and smoking policy.
- The Person in Charge or designated person shall:
  - Conduct a tour of the rig with all new personnel explaining emergency procedures and evacuation routes.
  - Oversee their enrollment in the contractor/subcontractor Short Service Employee program.
  - Assign a qualified person to repeat the induction for any person who left the rig for more than three months.

A9. Competency & Training

EGPC

9.1. Scope

This procedure applies for all EGPC affilated companies rig contractors employees to execute the competence assurance process.

9.2. Purpose

This procedure is to identify the training requirements, courses, and execute the training matrices for continual improvement and meeting the operational needs.

9.3. Training Requirements

9.3.1. Management of Major Emergencies (MOME)

MOME training program provides practical hands-on experience for managing unanticipated events. Personnel who are in charge shall undergo MOME training (Offshore Only).

- Persons to be trained (Minimum) : OIM and NTP
- Training Provider: Certified and Competent (3rd Party)
- Valid for: 5 Years

9.3.2. Proficiency in Survival Craft and rescue boat / FRC Coxwain (If equipped)

Training to be completed by an EGPC-approved school. Certificates of competency shall be maintained at the rig location.

- Persons to be trained (Minimum): Two (2) Coxswains per Lifeboat, as identified on the Station Bill and or the safe manning certificate.
- Training Provider: 3rd Party
- Valid for: 3 Years

9.3.3. Marine License

Training required by a regulatory body, training required to obtain and maintain a marine license or training required by the vessel's flag state. See Flag requirements for guidance as to where the training is to be completed.

- Persons to be trained (Minimum): OIM and Barge Engineer.
- Training Provider: Certified and Competent (3rd Party)
- Valid for: 5 Years

9.3.4. Global Maritime Distress and Safety System (GMDSS) Training

Training required by a regulatory body, training required to obtain and maintain a marine license or training required by the vessel's flag state. See Flag requirements for guidance as to where the training is to be completed.

- Persons to be trained (Minimum): Radio Operator
- Training Provider: Certified and Competent (3rd Party)
- Valid for: 5 Years

9.3.5. Stability

Training required by a regulatory body, training required to obtain and maintain a marine license or training required by the vessel's flag state. See Flag requirements for guidance as to where the training is to be completed.

- Persons to be trained (Minimum): OIM and Barge Engineer (if BE or Rig Mover OIM while Floating)
- Training Provider: Certified and Competent (3rd Party)
- Valid for: 5 Years

9.3.6. Helideck Operations Initial Training Standard (HOIT)

This training can be completed at any OPITO approved school. Certificates of competency shall be maintained at the rig location.

- Persons to be trained (Minimum): There shall be two (2) certified competent HLO/HOIT aboard at all times (one per shift).
- Training Provider: Certified and Competent 3rd Party. (OPITO).
- Valid for: None

9.3.7. Helideck Emergency Response Team Member (HERTM)

This training is to be completed at an EGPC approved school. Competency must be verified through experience and qualification.

- Persons to be trained (Minimum): There shall be four (4) certified competent HERTM aboard at all times, as identified on the Station Bill
- Training Provider: Certified and Competent external provider(OPITO)
- Valid for: 2 Years

9.3.8. Helideck Emergency Response Team Leader (HERTL)

This training is to be completed at an OPITO approved school. Competency must be verified through experience and qualification.

- Persons to be trained (Minimum): There shall be two (2) certified competent HERTL aboard at all times (one per shift)
- Training Provider: Certified and Competent external provider(OPITO)
- Valid for: 2 Years

9.3.9. HUET, Helicopter Underwater Escape Training

This training can be completed through any OPITO approved school. (Approved courses are BOSIET, TBOSIET (FOET which is a refresher for BOSIET/TBOSIET), HUET, THUET)

- Persons to be trained (Minimum): All personnel on-board.
- Training Provider: Certified and Competent (3rd Party).
- Valid for: 4 Years.

Note: THUET and TBOSIET are required for employees that are attending the training for the first time and for employees that require refresher training after their certification expires while working.

9.3.10. Acrylonitrile-Butadiene-Styren (ABS) Welder

Each MODU Welder shall be trained and certified in accordance with MODU classification society. Each land rig welder shall be deemed competent by a third party accreditation institution. All certifications shall be current and valid.

- Persons to be trained (Minimum): Welder.
- Training Provider: ABS approved examiner/3rd Party.
- Valid for: 3 Years..

9.3.11. Fire Fighting Team Leader (Offshore)

This training shall be completed at an EGPC approved school.

- Persons to be trained (Minimum): Fire Team leaders as identified on the Station Bill. Two (2) persons per tour
- Training Provider: Certified and Competent 3rd Party
- Valid for: 2 Years

9.3.12. Emergency Response Leader

Onshore senior personnel shall be trained to adequately respond in an emergency, this training shall follow both the contractor and EGPC emergency response procedures.

- Persons to be trained (Minimum): TP, NTP and Safety Engineer.

- Training Provider: Certified and Competent (3rd Party)
- Valid for: 5 Years.

9.3.13. Fire Team Member (Offshore)

This training should be conducted at an accredited external school. Each member of a fire team shall be able to demonstrate competency in basic firefighting techniques and the use of first aid firefighting appliances. Competency shall be demonstrated through experience, theoretical, and practical examination.

- Persons to be trained (Minimum): All Fire Team members as identified on the Station Bill.
- Training Provider: external provider(Must be OPITO/STCW-95 accredited or EGPC approved school).
- Valid for: As per certificate.

9.3.14. Gas Tester

Gas testing is required in all locations where injury to personnel or damage to property could occur due to the presence of combustible gases, toxic gases, or oxygen enriched/deficient atmospheres. An adequate number of competent personnel must be maintained at each rig location, it is required that the rig maintain at least two (2) competent persons per tour. Competency shall be demonstrated through experience, and theoretical and practical examination.

- Persons to be trained (Minimum): Two (2) persons per tour.
- Training Provider: Certified and Competent (external provider or In-House).
- Valid for: 2 Years.

Note: A current list of all competent Gas Testers shall be posted at the PTW issuing center

9.3.15. Confined Space Entry Inspection

A physical inspection is required in all locations where injury to personnel could occur due to the nature of confined space work as well as considering the presence of combustible gases, toxic gases, or oxygen enriched/deficient atmospheres, the physical condition of the work area must be considered, particular attention must be paid to rescue procedures in given confined space work areas. An adequate number of competent personnel trained in confined space entry inspection (this training shall include gas testing) must be maintained at each rig location, it is recommended that the rig maintain at least two (2) competent persons per tour. Competency shall be demonstrated through experience, theoretical and practical examination.

- Persons to be trained (Minimum): Two (2) persons per tour.
- Training Provider: Certified and Competent (external provider or In-House).
- Valid for: 3 Years.

Note: A current list of all competent Confined Space Entry Inspectors shall be maintained at the PTW issuing center.

9.3.16. Well Control

Well control training shall be completed at an IADC or IWCF approved school. Certificates of competency shall be maintained at the rig location.

- Persons to be trained (Minimum): Driller, NTP, and STP
- Training Provider: Approved IADC or IWCF School
- Valid for: 2 Years

9.3.17. First Aid CPR

This training shall be administered by an approved competent instructor at an external school or at the rig location, each trainee shall demonstrate competency through practical and theoretical examination.

- Persons to be trained (Minimum): All rig personnel.
- Training Provider: Certified and Competent (external provider or In-House)
- Valid for: 3 Years.

9.3.18. Fire Safety Training (Onshore)

Fire safety training will be provided in a manner appropriate to the risk identified and be adapted to take account of any new or changed risks to the safety of employees, such training will enable personnel to perform their duties as identified in the Fire Attack Plan.

- Persons to be trained (Minimum): All employees at the time of employment or when an employee is introduced to new work equipment or when new technology is introduced.
- Training Provider: Certified and Competent (external provider or In-House)
- Valid for: 3 Years.

9.3.19. HAZCOM Training

This program provides hazardous materials information, and guidance on how to handle chemicals safely to minimize incidents and reduce risks to people, production, equipment, and the environment.

- Persons to be trained (Minimum): All rig personnel.
- Training Provider: Certified and Competent (external provider or In-House)
- Valid for: 3 Years.

9.3.20. Spill Prevention Training

This training shall include prevention and containment of chemical spills. All personnel must have a basic understanding of prevention; containment; and the environmental, health, safety, and legislative impact of chemical spills.

- Persons to be trained (Minimum): All rig personnel, this training can be combined with HAZCOM training
- Training Provider: Certified and Competent (external provider or In-House)
- Valid for: 2 Years.

9.4. Respiratory Protection Training

The Rig Operator shall ensure that all respiratory protection equipment needed by, or reasonably anticipated to be needed by his employees, is provided. Those employees required to use this equipment must be trained in its effective use. This training shall include the following:

- The need for respirator protection.
- An explanation of why a particular type of respirator has been selected.
- Fitting of face pieces.
- Donning (putting on) and doffing (taking off) of respirators.
- Instructions in emergency procedures.
- Maintenance, inspection, and storage of respirators.
- Sealing and functioning of the face piece

- Persons to be trained (Minimum): All personnel at the rig location who may be required to use respiratory equipment in the normal course of their duties. This training shall be documented.
- Training Provider: Certified and Competent (external provider or In-House)
- Valid for: 3 Years.

9.4.1. Confined Space Training

All entrants into a confined space must be made aware of:

- The strict requirement for a PTW prior to any entry or hot work.
- The hazards of a confined space:
- Oxygen Deficiency
- Flammable and Explosive Gas
- Toxic Gas and Vapors
- Engulfment
- The strict requirement for an emergency observer.
- The necessity to wear a Confine Space Entry (CSE) full body harness.
- The importance of following the requirements as specified in HSERM/A/A-12/PTW-and the CSE procedure.

- The strict requirement for the preparation and review of a JSA.

- Persons to be trained (Minimum): All personnel whom in the course of their normal duties will be expected to enter a confined space.
- Training Provider: Certified and Competent (external provider or In-House)
- Valid for: 2 Years.

9.4.2. Lock-Out /Tag-Out

The purpose of this training is to protect personnel from the potential releases of stored energy or the startup of machinery or equipment that may cause injury. This specifically includes any maintenance activity where electrical, mechanical, steam, hydraulic, pneumatic or any other energy source is present. Additional hazards may include heated, flammable, toxic, corrosive or chemical materials. Employees required to perform Lock-Out/Tag-Out procedures shall receive training in these procedures before performing the procedures.

- Persons to be trained (Minimum): Employees required to perform Lock-Out/Tag-Out (LOTO) as part of their normal duties (Drillers, ASDs, Derrickmen, Electricians, Motormen and Mechanics).
- Training Provider: Certified and Competent (external provider or In-House).
- Valid for: 3 Years.

9.4.3. Permit to Work

As part of each Rig Operator and Service Company Loss Prevention Program, a Permit to Work System shall be established based on EGPC D&WO HSE Manual The system is intended to be applied to those jobs that represent a potential hazard to operations, personnel or equipment. Contractors may use existing internal forms developed as part of their loss prevention programs. Employees required to work under the PTW system procedures, or whose jobs may be affected by the PTW system procedures, shall receive training in these procedures.

- Persons to be trained (Minimum): Employees required to work under the PTW system procedures, or whose jobs may be affected by the PTW system procedures, shall receive training in these procedures to an appropriate level (OIM, TP, NTP, BE, Driller, ASD, Derrickman, Crane Operator, Electrician, Motorman, Mechanic and Safety Officer).
- Training Provider: Certified and Competent (external provider or In-House).
- Valid for: 3 Years.

9.4.4. Hydrogen Sulfide (H2S)

The Rig Operator and Service Company shall adequately train all his personnel in the basic fundamentals of Hydrogen Sulfide (H2S) safety. This training must include and all personnel on the rig must be able to demonstrate an understanding of the following:

- Characteristics of H2S and its toxicity.
- Detection and warning systems peculiar to the location.
- Emergency procedures consisting of:
- Designation of safe briefing areas.
- Wearing and use of emergency breathing equipment.
- Evacuation procedures.
- Rescue procedures.
- First aid for victims.
- Instructions in the inspection, maintenance, and use of assigned respiratory protection equipment.
- This training MUST include drills in all applicable procedures so that personnel on the location can quickly and effectively follow each of these instructions when there is an actual, life-threatening emergency.
- All basic H2S training shall include the actual donning and breathing from each different type of breathing apparatus in use on that particular rig. Each person must be able to don and breathe from the SCBA within 45 seconds.
- A training card shall be issued to each person completing the basic H2S training. This card shall remain valid for two years, following which the person must retake the basic H2S training.

- All personnel must be able to identify the H2S alarms.
- All personnel must be able to muster to the safe briefing area or muster station (offshore). Offshore personnel must also be able to enter into the lifeboat wearing both SCBA and personal floatation device (PFD).
- In addition to the basic skills listed above, all personnel must be able to competently perform the tasks assigned to them in the rig specific H2S emergency plan.

- Persons to be trained (Minimum): All personnel on location.
- Training Provider: Certified and Competent (external provider or In-House).
- Valid for: 2 Years.

9.4.5. Hazard Recognition Program

The Rig Operator shall adequately train each of his employees in the recognition and avoidance of unsafe conditions and in all Company loss prevention standards applicable to his work environment. He shall also adequately train his employees in methods to control or eliminate any hazards or other exposures resulting in injury or illness (hazard recognition program).

- Persons to be trained (Minimum): All personnel on location.
- Training Provider: Certified and Competent (external provider or In-House).
- Valid for: 3 Years.

9.4.6. Air Hoist and Manrider Operator Training

Air hoists are powerful pieces of equipment that if misused can lead to serious incidents. Only qualified competent personnel shall operate air hoists. Competency shall be demonstrated through experience, and theoretical and practical examination using Air Hoist and Man Rider.

- Persons to be trained (Minimum): All personnel who in the course of their normal duties would be expected to operate an Air Hoist (Driller, ASD, Derrickman, Crane Operator, Roughneck, Roustabout, Mechanic, and Motorman).
- Training Provider: Certified and Competent (external provider or In-House).
- Valid for: 2 Years.

9.4.7. Fall Protection/ working at height Training

Fall protection refers to the use of lifeline, harnesses, guardrails, anchors, lanyards, and safety netting. One or more of these systems may be required when working at an elevation. Workers shall be trained and competent in the use of the "Fall Protection Plan" and the inspection and use of Fall Arrest and/or Fall Restraint equipment prior to using it. Training shall reflect "ANSI/ASSE Z359.1 and OSHA," with curriculum content that meets or exceeds current international training models.

- Persons to be trained (Minimum): All personnel who would be expected to work at height as part of their duties; deck crew, drill crew, maintenance crew and marine crew.
- Training Provider: Certified and Competent (external provider or In-House).
- Valid for: 2 Years.

9.4.8. Rigging and Lifting

Rigging and lifting involves the use of equipment that if misused can lead to serious incidents. Only qualified competent personnel shall rig loads or signal cranes and forklifts. Competency shall be demonstrated through; experience, theoretical, and practical examination.

- Persons to be trained (Minimum): All personnel who will be expected to prepare equipment or personnel to be lifted by a powered or manual hoist (BE, Crane Operator, Roughnecks, Roustabouts and Medic).
- Training Provider: Certified and Competent (external provider or In-House).
- Valid for: 3 Years.

9.4.9. Manual Handling

Many injuries are documented annually as a direct result of poor manual handling techniques. Training must include the use of good kinetic lifting techniques.

- Persons to be trained (Minimum): All personnel on location.
- Training Provider: Certified and Competent (external provider or In-House).
- Valid for: 3 Years.

9.4.10. Scaffolding Safety

Scaffolds shall only be erected and dismantled by qualified personnel, taking into account stresses on the scaffold, main supports, ties, etc., and all personnel must be made aware of EGPC and contractor procedures relating to the erection and dismantling of the scaffolding.

- Persons to be trained (Minimum): All personnel who; supervise, erect, and/or dismantle scaffolding and its work platforms (Tool pusher and Barge Engineer) (Designated scaffolding inspectors and erectors). If no scaffolding is available or used at all on rig location no training is required.
- Training Provider: Certified and Competent (external provider or In-House).
- Valid for: 3 Years.

9.4.11. DROPS Training

Personnel must be aware of how to identify, evaluate and the potential consequences of a Drop object event and the prevention measurements required to be in place to avoid it.

- Persons to be trained (Minimum): All personnel on location, except catering personnel
- Training Provider: Certified and Competent instructor accredited by a recognized national or international agency (external provider or in House)
- Valid for: 2 Years.

Note: Advanced DROPS training shall be provided for the persons who perfom/ accountable for the DROPS insepection

9.4.12. Emergency Response to a Power Line Incident

This program demonstrates how a driver evacuate a vehicle which has contacted overhead/ underground power lines safely. Reference: "OSHA Title 29 CFR 1926.

- Persons to be trained (Minimum): All rig move drivers and escort personnel.
- Training Provider: Certified and Competent (external provider or in House)
- Valid for: Once

9.4.13. Banksmen/Flagman Training

This training directs the movements of large vehicles both rigid and articulated on a worksite, during loading and unloading to safely maneuver identified structures or obstacles in a route.

- Persons to be trained (Minimum): All rig move personnel/person responsible for assisting in the maneuvering and loading/unloading vehicles, drivers and escort personnel.
- Training Provider: Certified and Competent (external provider or in House)
- Valid for: 3 Years

Note: Additional Rigless Operations Training

9.4.14. Rig Inspection Training

Rig inspection training equips individuals with the knowledge and skills to conduct thorough and accurate inspections of drilling rigs. It empowers individuals to contribute to a safer, more efficient, and environmentally responsible drilling environment.

- Persons to be trained (Minimum): driller, NTP, STP, safety engineer
- Training Provider: Certified and Competent (external provider or in House and approved from EGPC Drilling and workover steering committe)
- Valid for: once

9.4.15. Preventive Maintenance

Preventive maintenance (PM) training equips individuals with the knowledge and skills to proactively maintain equipment and assets, preventing breakdowns and ensuring optimal performance. By equipping your workforce with the knowledge and skills gained through preventive maintenance training, you can create a culture of proactive asset care, ensuring the smooth operation of your equipment and the success of your organization.

- Persons to be trained (Minimum): mechanic, electrician
- Training Provider: Certified and Competent (external provider or in House)
- Valid for: once

9.4.16. Environmental Awareness

Environmental awareness training educates individuals about the impact of human activities on the planet and empowers them to make eco-conscious choices and establishing and applying environmental registers. Investing in environmental awareness training empowers individuals to become agents of change. By fostering a culture of sustainability within your organization, you can contribute to a healthier planet and a brighter future.

- Persons to be trained (Minimum): all
- Training Provider: Certified and Competent (external provider or in House)
- Valid for: once

9.4.17. HACCP Awareness

HACCP (Hazard Analysis and Critical Control Points) training equips individuals with the knowledge and skills to implement a preventive food safety system. This internationally recognized approach focuses on identifying, preventing, and controlling hazards throughout the food chain

- Persons to be trained (Minimum): catering crew, safety engineer
- Training Provider: Certified and Competent (external provider or in House)
- Valid for: once

Specific knowledge and experience requirements for special equipment operations requires progressive training for its operators. These training requirements shall be developed by the Service Companies for crew members, senior operators and shift supervisors. This training will be identified in the Service Company training matrix.

In addition to the required training, these personnel shall have experience with the type of work planned, to carry out the duties assigned in a competent manner. The type and amount of experience required depends on the complexity of the work and the specific duties assigned.

The Service Company shall conduct an assessment of the operators work experience and training to ensure they have the skills and knowledge required to meet the requirements for the work and duties being assigned.

9.5. Training Matrix

	Validity	OIM	Tool pusher (STP)	Night pusher (NTP)	Barge Engineer	Rig Engineer	Driller	A/D	Derrick man	Floor man	Assistant Floor man	Crane Operator	Forklift Operator	Mechanic	Electration	Doctor / Medic	Radio Operator	Safety Engineer	welder
Management of Major Emergencies (MOME)	5 Y	X		X			X										X		
FRC Coxwain	3 Y													X	X				
Marine License	5 Y	X			X														
GMDSS Training	5 Y																X		
Stability	5 Y	X			X												X		
Helideck Operations Initial Training Standard (HOIT)	Once							X				X							
Helideck Emergency Response Team Member (HERTM)	2 Y	X	X						X	X									
Helideck Emergency Response Team Leader (HERTL)	2 Y	X	X	X	X	X													
HUET	4 Y	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ABS Welder	3 Y																		X
Fire Fighting Team Leader (Offshore)	2 Y	X	X	X	X	X													
Emergency Response Leader	5 Y		X	X														X	
Fire Team member	3 Y						X	X	X	X	X	X	X	X	X	X	X	X	
Gas Tester	2 Y		X	X	X	X		X	X					X	X			X	
Confined Space Entry	3 Y							X	X	X				X	X			X	
Well Control	2 Y		X	X			X												
First Aid	3 Y	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Fire protection	3 Y	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HAZCOM	3 Y	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Spill Prevention	3 Y	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Respiratory Protection	3 Y	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Confined Space entry Inspection	3 Y	X	X	X	X		X	X					X	X			X		

	Validity	OIM	Tool pusher (STP)	Night pusher (NTP)	Barge Engineer	Rig Engineer	Driller	A/D	Derrick man	Floor man	Assistant Floor man	Crane Operator	Forklift Operator	Mechanic	Electration	Doctor / Medic	Radio Operator	Safety Engineer	welder
PTW	3 Y																		
LOTO	3 Y																		
H2S	2 Y																		
Hazard Recognition	3 Y																		
Air Hoist	2 Y																		
Fall Protection	2 Y																		
Rigging & Lifting	3 Y																		
Manual Handling	2 Y																		
Scaffolding Safety	3 Y																		
DROPS	2 Y																		
Emergency response to a power lie incident	Once																		
Banksmen/Flagman Training	3 Y																		
Rig inspection	once																		
Preventive maintenance	once																		
Environmental awareness	once																		
HACCP	once																		

A10. Short Service Employee Program (SSEP)

EGPC

10.1. Scope

This program applies to all rig contractors and service companies to help protect persons who are at particular risk on work sites because they are new (Short Service Employees), or are unfamiliar with the site.

10.2. Purpose

The purpose of a Short Service Employee (SSE) Program is to ensure that new employees, temporary workers, and subcontractors with less than three months of experience are provided with the necessary training, supervision, and support to perform their jobs safely and effectively. This program aims to reduce the risk of accidents, injuries, and other hazards associated with inexperience and lack of familiarity with workplace procedures and safety regulations.

10.3. Responsibility

It is the responsibility of the rig contractor PIC to ensure that a Short Service Employee (SSE) program, meeting the following minimum requirements is implemented at their site.

10.4. Procedure

All new employees, including regular and contract employees, holding rig rotational positions shall be easily identifiable as SSEs by the following system.

- For the first 45 working days that they are filling a regularly rotating or field position they shall wear a different colored hard hat. If they are transferred to or working temporarily on another site during this period, they shall continue to wear a different colored hardhat based on the rig contractors' and service companies' policies for the duration of their initial 45 working day period.
- After the 45 working day initial period they shall only wear the company's regular color hard hat. An SSE shall be only or all of the following:
  - New to the industry.
  - New to the company.
  - New to the rig/location.
- All service personnel shall conform to the above system of recognition, but in any event, shall not wear a hard hat color that conflicts with and/or reduces the effectiveness of the above system.
- All SSEs and visitors are required to attend an initial orientation on the rig before beginning work.
- All SSEs shall be assigned in writing by a contractor, or a safety partner (Mentor) from within their work group. The supervisor and appointed safety partner (Mentor) shall provide close supervision during the appropriate familiarization.
- The supervisor and designated safety partner shall ensure that the SSE is familiarized with personal protective equipment, all relevant procedures, and the location and operation of emergency equipment.
- The supervisor and appointed safety partner shall discuss and review with the SSE any known and/or potential hazards associated with a proposed task before commencement, and review all emergency equipment, personal protective equipment, and relevant procedures. An appropriate hazard recognition process must be utilized.
- The appropriate supervisor shall enroll the SSE into the program by utilizing the Short Service Employee Enrollment Form, a copy retained on the rig to record the enrollment.
- Following the successful completion of the required SSE period, the supervisor and appointed safety partner shall record the transition by signing and dating the enrollment form. The completed form shall be maintained on the rig. An employee shall not be considered a graduate of the program until he/she has completed the following training, as a minimum:
  - H2S safety training
  - Basic Fire Fighting
  - Casualty Handling
  - Permit to Work

- Hazard Recognition Program
- Rigging and Lifting
- Fall Protection Training
- Confined Space Entry

- All Training must be provided in compliance with EGPC D&WO HSE requirements.
- Additional questions and tasks shall be added as necessary by the supervisor and safety partner, to ensure that the employee has a working knowledge of Safety and Environmental procedures, and has demonstrated a safe work ethic and safe behavior throughout the SSE program.
- Any Employee who is not deemed as qualified for release from SSE status after 45 working days, may continue to work only with written approval of the Person in Charge (PIC).

AII. Journey Management System (JMS)

EGPC

11.1. Scope

The Safety Management System (SMS) serves as a guide for managing work-related travel by implementing a risk-based Journey Management System (JMS). It provides a standardized approach for EGPC drilling contractors to create a JMS that identifies their travel requirements, how to manage travel, and how to deal with travel-related incidents and emergencies.

Any additional notification, reporting and/or investigation requirements as a result of work-related travel incidents shall also apply as per the EGPC Incident reporting and investigation requirements.

11.2. Purpose

The goal of the JMS is to minimize or eliminate travel-related risks wherever possible, using engineering solutions such as mandatory locators or tracking technologies when traveling, and administrative controls such as a risk-based JMS with an emphasis on positive communication and proper documentation. By enforcing the drilling contractor's JMS, safe travel behavior can be ensured.

11.3. Journey Management System (JMS)

11.3.1. Program Requirements

- The drilling contractor is responsible for developing its own JMS equivalent to this SMS and shall be reviewed and approved by the proponent drilling contractor.
- The JMS shall define the drilling contractor's work-related travel needs, managing travel, and managing travel-related incidents.
- JMS system could be implemented manually or through electronic or digital-based technologies, provided these solutions are fully integrated and complained with companies SMS, legal requirement.

11.3.2. Work-Related Travel Requirements

- The drilling contractor shall identify and define all work-related travel needs based on the operational business requirements and geographical locations.
- Categorize the work-related travel needs into routine travel and non-routine travel.
- During any adverse weather condition, all vehicle movement shall be restricted to the minimum, in case any movement (after approvals) all driving safety precautions shall be applied.
- Night travel shall be risk-based on a case-by-case basis. No night driving is allowed unless it is essential to business operations or required for personal safety reasons or medical cases. Night driving requires authorization from the drilling contractor's senior management level.

11.3.3. Manage Work-Related Travel

The drilling contractor shall have a risk-based JMP which emphasizes;

- Use of mandatory technologies when traveling (e.g., GPS, tracking system shall be equipped through ETIT Companies and/or satellite communications), Proper follow up with the driver during all trips, till reaching the final destination.
- The JMP shall include the following sections and standards as minimum requirements:
  - A time-out/time-in log system for determining when transportation means are behind the estimated arrival time, and this information may aid in primary and secondary search and rescue efforts. The logging system must have the following components:
  - Passengers Name(s),
  - JMP number(s),
  - Mode of transportation (for example, air, sea, or land),
  - Destination(s) .
  - Transport type and vehicle.
  - Planned route(s),

- Departure time,
- Expected arrival time at destination(s),
- Expected return time to the origin, if applicable,
- Contact telephone number(s) or radio frequency,
- Additional information,
- A journey management coordinator (or equivalent to meet the intent),
- Signature(s) out/in.

- Nomination of a Journey Management Coordinator (JMC) per trip based on the drilling contractor's structure and operations. Drilling contractors utilizing a centralized journey management system would meet this requirement.
- For all road routine travel, the appropriate emergency procedures, supplies and equipment shall be carried for the journey and include the following:
  - Periodic vehicle inspection sticker (if applicable)
  - First Aid kit
  - Vehicle tracking system (shall be equipped through ETIT Companies)
  - Tire changing kit
  - Reflective Triangles (x2)
  - Reflective Vest
  - Pair of Gloves
  - Jumper (starter) Cable
  - Air conditioning working
  - Windscreen free of cracks/chips
  - Posted drilling contractor lost in desert instruction.
  - Tire tread depth >6 mm & no cracks,
  - Tire Pressure (PSI) correct to vehicle specifications, including spare tire.
- For all travels, the appropriate emergency procedures, supplies, and equipment shall be carried for the journey and include the following:
  - The requirements of the section above plus:
  - 4x4 vehicle
  - Off-road driver training
  - When a single vehicle is used, travel should be with a minimum of two persons (if applicable).
  - Satellite mobile in case of no mobile signal
  - Any additional equipment, supplies, or procedures that may be appropriate for the intended journey.
  - Off-Road survival box including the following but not limited to:-
    - Igloo and water (>5L per person traveling)
    - Shovel
    - Towing Cable/towing strap
    - Shackles
    - Flash Light (with spare batteries)
    - 12V portable tire air compressor

11.3.4. Manage Work-Related Travel Incidents and Emergencies

- It is critical for emergency preparedness of journey management to effectively plan and schedule travel journeys in advance which include:
  - The drilling contractor and Service Companies shall qualitatively assess the risk of work-related travel then rank the types of travel, identify credible incidents (or scenarios) for work-related travel and emergency medical evacuation as part of the overall drilling contractor's emergency response program, and take the appropriate actions accordingly.
  - The JMP shall include the following sections and standards as minimum requirements within the drilling contractor's emergency response plan (ERP):
  - The drilling contractor and Service Companies shall have an emergency response plan for primary search, rescue events, and emergency medical evacuation events if required.
  - Where the drilling contractor and Service Companies's ERP would not cover the work-related travel emergency response for their workers or contractors, the drilling contractor and Service Companies shall implement the EGPC's emergency response plan for primary search

and rescue situations.
- Each drilling contractor and service companies shall maintain access to the Vehicle Tracking System to support plans for primary search and rescue events.
- If a missing person(s) is not found after a maximum of 3 hours since the activation of the drilling contractor's primary search and rescue response plan, 'The EGPC Emergency control room' shall be called and escalated to a secondary search and rescue to ensure appropriate resources are utilized.

• Primary search and rescue drills shall be scheduled and conducted at a minimum annually.
• Participation in secondary search and rescue drills scheduled at a corporate level to ensure existing procedures and resources are sufficient to meet the intent of this instruction.

A12. Contractor Management/ Service Providers

EGPC

12.1. Scope

This procedure offer a range of services to manage the entire lifecycle of contracted services, from pre-qualification and selection to performance monitoring and post-contract evaluation. This typically includes:

12.1.1. Pre-qualification and selection

Establishing contractor qualification criteria, pre-qualifying potential vendors, conducting bid evaluations, and selecting the best contractor for the job based on technical expertise, safety record, experience, and cost.

12.1.2. Contract administration

Managing contracts through all stages, including reviewing and negotiating terms, issuing purchase orders, handling change orders, and ensuring compliance with all contractual obligations.

12.1.3. Performance monitoring

Tracking contractor performance against agreed-upon metrics, including safety, quality, schedule, and budget. This often involves conducting site visits, reviewing reports, and identifying areas for improvement.

12.1.4. Risk management

Identifying and mitigating potential risks associated with contractor activities, such as safety incidents, environmental damage, and financial losses. This may involve developing contingency plans and implementing safety protocols.

12.1.5. Post-contract evaluation

Evaluating the overall performance of the contractor and the effectiveness of the contract management process. This can inform future contractor selection and contract negotiation strategies.

12.2. Purpose

The primary purpose of using a CMSP is to improve the efficiency, effectiveness, and safety of managing drilling contractors. CMSPs can offer drilling companies several benefits, including:

12.2.1. Reduced costs

By streamlining the contracting process and ensuring compliance with contracts, CMSPs can help drilling companies save money on procurement, project delays, and rework.

12.2.2. Improved safety

CMSPs can help drilling companies enforce safety standards and procedures, leading to a reduced risk of accidents and injuries.

12.2.3. Enhanced quality

CMSPs can ensure that contractors deliver work that meets the required quality standards, reducing the need for rework and delays.

12.2.4. Increased efficiency

By managing the administrative burden of contracting, CMSPs can free up drilling company personnel to focus on core operational tasks.

12.2.5. Reduced risk

CMSPs can help drilling companies identify and mitigate potential risks associated with contractor activities, protecting their assets and reputation.

Overall, CMSPs play a critical role in helping drilling companies manage their contractor relationships effectively and achieve their operational goals.

For all related guidelines, please refer to EGPC's contractor management guidelines.

A13. HSE Audits and Inspections Reporting

EGPC

13.1. Scope

The scope of this procedure applies to all EGPC D&WO Operators and contractors.

13.2. Purpose

The purpose of this Procedure is to outline the types of EGPC inspections, assessments and periodic reviews that will occur across the Rig contractors and provide directional advice in managing safe processes.

Comprehensive checklists shall be used so that important items/areas are not overlooked.

13.3. Responsibilities

13.3.1. EGPC Audit Focal Point

- Responsible for the verification and tracking of all submitted contractor safety inspection reports.
- Perform Trend Analysis of all findings from all inspection reports.
- Perform a root-cause analysis (RCA) of all repeat/reoccurring inspection deficiencies.

13.3.2. Auditors Committee

- Develop audit objectives, plans, and scope by reviewing available information and conducting research.
- Prepare audit findings, write audit reports, and develop recommendations.
- Ensure compliance with all applicable plans, policies, and standards.

13.3.3. Auditee

- Responsible for initiating correction and corrective action(s) within due time, and reporting back to the Auditor's committee according to the audit follow-up scheme.

13.4. Definitions

13.4.1. HSE Audit

Is a systematic critical examination of the whole health and safety management system to identify any weaknesses and then produce an action plan with suitable recommendations to correct any non-conformity.

The audit aims to ensure that the management system is Used, Adequate, and Existing by Using THREE evidences:

- Inspection (physical observation)
- Documents checks
- Staff interviews

13.4.2. HSE Inspections

Are typically more routine and limited in scope, involving visual checks of equipment and specific hazards that need to be controlled. While formal corrective action may be required, in some cases problems can be documented and then corrected on the spot.

13.4.3. Examples:

Audits	inspections
Tests the existence, adequacy and use of safety management systems	Identifies hazards that are not controlled to a standard
Includes physical observation, staff interviews and documentation checks	Physical observation only
Identifies Rig contractoral failures which are root causes of accidents and ill-health	Identifies unsafe conditions and some unsafe actions that are immediate causes of accidents
Very proactive	largely reactive as they lead to quick fix of immediate causes rather than corrective action of root causes

13.5. Procedure

13.5.1. Audit Process

- EGPC will develop an annual inspections and audits program to confirm HSE performance sustainability within Rig contractors, HSE inspections and audit programs may include but are not limited to:
  - Quarterly HSE inspection
  - Annual HSE Gap analysis audit
  - Pre-commencement Inspection
- EGPC shall establish an audit committee responsible for conducting audits and inspections across all Rig contractors operating under the EGPC. The committee's main objective is to ensure that the current HSE systems meet both national and international standards by conducting thorough reviews.
- Each Rig contractor shall develop HSE inspections and audits program to monitor HSE performance within the Rig contractor which reflects management commitment regarding HSE performance sustainability, HSE inspections, and audit programs may include but are not limited to:
  - Daily cross-area inspection
  - Monthly complete area inspection
  - Monthly environmental area inspection
  - QHSE Annual audit

13.5.2. Audit Findings

Findings shall be categorized as follows

13.5.2.1. Compliance:

Compliance with the QHSE management system and international standards requirements.

13.5.2.2. Critical NC

- A finding which include life threatening hazard. It should follow with immediate action to eliminate it.
- Operations will not be resumed until status proved safe and Critical NC either removed or downgraded.

13.5.2.3. Major NC

- A finding with a high risk that could lead into major personal injury/ equipment damage.
- A complete violation to QHSE management system, International standards/ legal

requirements.
- Repetitive / a number of minor nonconformities associated with the same requirement.

13.5.2.4. Minor NC

A finding with a medium risk that could lead to a minor damage/person injury. Inadequate implementation of QHSE management system

13.5.2.5. OFI

Opportunity for Improvement

13.6. EGPC Required Audit & Inspections

13.6.1. Pre-Commencement

Pre-commencement inspections (PCI) apply to all drilling contractors new to Drilling &WO operations and contractors where there is a significant amendment to the existing contract or existing Scope of Work (SOW). Example:

New Rigs
- Post-Shipyard.
- Upgrades or Major Maintenance.
- Special Requests.

13.6.2. Contractor Asset Integrity Inspection

- Contractors will conduct asset integrity inspections to meet the requirements of industry best practices and standards.
  Example: API 4G. Derrick Inspections.
- All inspection report deficiencies will be rectified and tracked through closure.

13.6.3. Gap Analysis Audit

- A Gap Analysis is a strategic planning tool to help the Rig contractor to understand where we are, where we want to be and how you're going to get there.
- One of the first steps in the Management System transition or implementation project is to compare the current Management System to the requirements of the standard.
- A gap analysis is mainly done at the beginning of the D&WO guideline implementation to assess what is currently in place against the set of requirements of the EGPC D&WO guideline.

13.6.4. Regular Internal Inspections

13.6.4.1. Hand Tools, Power Tools, and Equipment Pre-Use Inspections

A worker must perform a pre-use visual inspection of any hand tool, power tool or equipment when using it for the first time during his tour to ensure it is free from defect or deficiency and is properly equipped with any guard or safety accessory required. This is an undocumented inspection.

13.6.4.2. Pre-Spud Inspection

After moving a rig onto a new location but before spud, the Person In Charge (PIC) shall ensure that the worksite and rig equipment are inspected as per the Pre-Spud Checklist.

13.6.4.3. Daily Mobile Equipment Pre-Use Inspection

This shall be performed by the operator of any mobile equipment, e.g., forklift, crane, elevating work platform, motor vehicle, etc. This documented inspection shall conform to the Original Equipment Manufacturer (OEM) recommended pre-use inspection process. The inspection report or log shall be available for review.

13.6.4.4. Derrick Mast Inspection

The Rig contractor driller shall ensure that the derrick is inspected once a week as per the Drilling Weekly Inspection Checklist. He may delegate the inspection to the Derrick man but retains responsibility for its completion.

13.6.4.5. DROPS Inspection

The rig operator PIC shall ensure that DROPS inspections are completed by a competent team. These inspections shall be documented.

13.6.4.6. Drillers Pre-Tour Inspection

This inspection shall be conducted by the incoming driller at the start of his tour. It shall be done in conjunction with the turnover at tour change. The inspection shall be performed and documented.

A14. MANAGEMENT OF CHANGE

EGPC

14.1. Scope

This procedures gives guidelines for controlling management of change process that could significantly affect management system to fulfill customer demands within all over EGPC ffilated comapanies rig contractors

14.2. Purpose

The purpose of this procedure is to establish and implement process to formally manage changes or additions (both temporary and permanent) so that the processes, organizational structure, drilling and contractor management operations, equipment, and QM-HSE performance is not compromised.

EGPC shall ensure that the integrity of the quality management system is maintained when changes to the quality management system are planned and implemented.

14.2.1. An MOC is used to:

- Identify and mitigate hazards due to change.
- Provide training required by the change.
- Communicating the change to affected personnel.

Therefore, changes can be safely incorporated into the organization's operations.

14.2.2. MOC is required when changes occur in the following situations:

- Emergencies exceeding 24 hours duration, where changes to an operational arrangement occurs.
  (ex.: site layouts, operating process are modified, move from 24-hour operations to daylight manning only, changes in shift patterns or manning levels, when facilities are mothballed or the Departments scope changes, i.e. gas drilling or workover activities are added.
- When new procedure steps, critical suppliers, Improvements. Upgrades. Renovations (in service or product) in both field and office are introduced in the process.
- Technology and equipment changes.
- Rig layout or associated building changes.
- Organizational changes are made, i.e., when the Department opens and/or closes a division or other Department organizational structural/name or activity changes including position changes are proposed.
- Movement of key personnel anywhere in or from outside organizations.
- Non In Kind or Like-for-Like Replacements/ Changes.(e.g., component, equipment, chemical, and procedure)

Changes to the management system, in regulatory requirements, standards, specifications and/or technical codes. (Ex. Change in API or ISO standard)

14.2.3. An MOC is not required for the following:

- Changes in kind – i.e., normal maintenance work, where parts or equipment are replaced by an identical part or equipment of an identical make and model.
- Bypassing or modifying an emergency shutdown device or system for servicing only is not part of the department's MOC process. Rather, the Safe Work Procedures and deviation permit (not exceeding 24 hours, if exceeds, it's a temporary change) shall be used to manage this type of work.
- Urgently needed changes for an emergency. Once emergency situations end, work gets back to normal conditions, otherwise MOC is required.

14.3. Definitions

14.3.1. Change

To make or become different. Change implies making either an essential difference often amounting to a loss of original identity or a substitution of one thing for another.

14.3.2. Facility Change

Any physical change in a facility or deviation from existing documented safe operating limits, except like for like replacement.

14.3.3. Procedural Change

Any deviation from the approved work procedures or documented safe operating limits.

Examples of "Change" are provided in Appendix – A: "Examples of Changes".

14.3.4. Not In-Kind Change

This includes any replacement, change or addition that does not match the specification for the existing item, equipment, structure or component or with the operating procedure for the system. "Not in Kind" changes require formal review and approval as documented under this procedure.

14.3.5. In-Kind or Like-for-Like Change

Like-for-like change is the replacement of an existing item (e.g., component, equipment, chemical, and procedure) with another item that complies with the current design specification of the item being replaced.

The formal review as outlined in this MOC procedure is not required for Like-for-Like changes.

Examples of "Like-for-Like change" are provided in the aide memoire included in Appendix – B of this procedure.

14.3.6. Management of Change

Process to systematically evaluate, authorize, implement, and document changes to existing processes and assets, to ensure that safeguards are in place to eliminate the possibility of introducing hazards because of changes.

14.3.7. Management of Organizational Change

Process to systematically evaluate, authorize, implement, and document changes in personnel and the organizational structure, to ensure that safeguards are in place to eliminate the possibility of introducing hazards (loss of skills, experience, and supervisory oversight) because of changes

14.3.8. Change Log Register

The Department log for recording and tracking MOC

14.3.9. MOC Package

All the documentation necessary for the submittal, review, and implementation of the change (ex: MOC form, supporting technical documents, approval or rejection reports, etc...)

14.3.10. Change Request Form

Department forms the initiator completes and forwards to the MOC Coordinator to start the change management process.

14.3.11. Change Review Team

Internal multidiscipline Department team selected by the Department Head and MOC Coordinator that are technical authorities and that have the experience and knowledge to review and approve changes

14.3.12. Change Implementation Team

Department subject matter experts are responsible for developing the change idea, performing the relevant risk assessments, and engineering studies, and developing the change and communication plans

14.3.13. Communication

When a change is made in a process that will affect how the Department performs a specific task, those changes are required to be communicated across the Department to ensure the change is effectively implemented

14.3.14. Hazard Identification

The process of recognizing that a hazard exists and defining its characteristics.

14.3.15. Minor

Lesser or secondary in amount, extent, importance, or degree.

14.3.16. Change Initiator

The person, usually an employee within D&WO, who identifies the necessity for a change.

14.3.17. MOC Coordinator

A person assigned by the Department Head to manage the departments MOC process by recording, tracking and reporting the status of the MOC requests.

14.3.18. Primary/Initial Hazard Analysis

Any key organizational or staff changes, Any significant drilling process improvement changes or Any changes to standards, material specifications, operating conditions, methods, or procedures.

Is usually the first attempt to systematically identify and categorize hazards associated with a proposed change using a team-oriented process. The formal technique is used to identifying hazards, assess the severity and consequences of potential incidents that could occur from these hazards, then risk assess these events using a risk matrix. Additional safeguards may be proposed to reduce the risk to acceptable levels, which then is developed to be a full risk assessment

14.3.19. Pre-Start-up Safety Review

A field verification process undertaken to ensure that all criteria identified in the change review process with regard to physical installation, procedural amendments and training are in place. The Initiators Supervisor shall ensure a PSSR is conducted.

14.3.20. Risk Analysis Checklist

A checklist used to identify potential hazards and operability problems

14.3.21. Replacement-in-Kind

A replacement-in-kind is replacing equipment, infrastructure, supporting systems or personnel positions with identical or new equipment, infrastructure, supporting systems or personnel, i.e., like for like. It is one in which the old equipment is replaced with an identical part or an equivalent part approved and specified by the applicable engineering standard or in the case of a change to process parameters these remain within the established MOC timeframe . Replacement-in-kind is not subject to the EGPC MOC procedure. Any replacement of equipment or minor update to written procedures requires documentation in accordance with maintenance work requirements (e.g., work orders in the case of equipment), or appropriate approvals in the case of procedures. Any replacement needs to include all necessary quality assurance, quality control, inspection, and field verification.

14.3.22. Training Needs Analysis

A training needs analysis is utilized to identify the necessary training required to ensure that personnel are fully conversant with the equipment and operations within their facilities by identifying any required training needed because of a specific change.

14.3.23. Risk

Combination of the frequency of occurrence and consequence of a specified hazardous event.

14.3.24. Critical suppliers

Is one where would have a negative impact on your business if not present. They might be a supplier of a critical product or service, components, and/or activities.

14.3.25. Significant Change

Any changes to parts, equipment, or facilities including changes resulting from purchasing a replacement with a non-identical make and model.

14.4. Responsibilities

14.4.1. Change Initiator (CI)

- Identify the change, (e.g., changes to process technology, material, equipment, procedures, facilities, buildings or departmental structure and positions).
- Identify what the change will affect (impact) and the expected benefits
- Discuss the proposed change with their supervisor and get their agreement to proceed further with its assessment. This discussion should be based upon the technical basis of the change, as well as the benefits.
- Provide a brief justification for the proposed change.
- Identify the type of change (whether it is temporary or permanent).
- Complete a change request form including attaching relevant documents and submit this to the MOC coordinator.
- Adding closing target date according to change categories.

Note: Change initiator cannot be a coordinator

14.4.2. MOC Coordinator (reviews request then informs/announces completion)

- It is the individual, designated by the Department Head, who has overall coordination for implementation of the change procedure.
- Document the receipt of any change request (so it can be tracked).
- Send all MOC forms and documents to document control team for record keeping.
- Assign tracking number and keep records of all MOC requests and send to.
- Track and monitor the status of the MOC (i.e., from initiation to completion) in the change log register and coordinates the MOC process from initiation to completion/closure.
- Ensure that the change hasn't been requested in the past, hasn't been previously rejected and there are no conflicts with other changes taking place.
- Carry out an initial verification of the acceptability of the change proposal affecting the department to pass on to the Department CRT for review of the change suggestion/proposal.
- In conjunction with the Department Head, establish a departmental list of potential members for the Department Change Review Team consisting of subject matter experts (SME) from within the department.
- Coordinate when the CRT is to meet to review an idea for change.
- Recommend to the Department Head to close the MOC.

14.4.3. Change Implementation Team

Evaluate the approved change proposal addressing hazard identification, risk assessment/reduction/control, technical skill coverage and expertise, training needs (matrix) update, communication to affected personnel, and revision of assessment internal procedures/processes.

- Modify/enhance the required initial risk assessment if needed.
- Performs any additional required design studies.
- Develop an implementation/communication plan and provide the approved implementation plan to the identified personnel for implementation. Plan is to determine how all affected

persons understand the change which is taking place.
- Present the completed design to the CRT for approval of implementation.
- Work with the Training Coordinator to develop any training material required.

14.4.4. Change Review Team (CRT) (reviews request and implementation plan)

Reviews the change request on its technical basis and assess for potential:

- Safety
- Basis for change
- Feasibility
- Benefits
- Financial implications
- Environmental
- Organizational impacts

The CRT does an initial review to determine the purpose of the change and how the change adds value or benefits the department and also if it is safe to undertake/implement. The CRT consults and obtain the concurrence of others, if the change impacts their area.

- Confirm the change to proceed to the implementation stage if it is considered suitable.
- In case of rejection, provide documented reasons for rejecting change ideas.
- Review and approves the implementation plan developed by Change Implementation Team.
- Determine if the proposed change can proceed to implementation and if so what other actions are required.
- The CRT is to be a multidiscipline team of experts from the Department (i.e., Operations, QM-HSE, etc.) with the necessary background to assess the suitability of a change. It is important that every discipline/operational function is represented for the MOC request to be reviewed thoroughly.
- The CRT will be the technical authorities from their relevant disciplines who can determine the basis of the change and if the change will be:
  - Suitable to provide the intended benefits.
  - The feasibility of the change.
  - Safe in principal.
- Has the authority to approve a change in principal.
- Can assign the Change Implementation Team if one has not been assigned so far.
- After the implementation stage is complete the CRT review its outcome to determine if the proposed change can proceed to implementation and if so what other actions are also required.

14.4.5. Change Approver

- Establish a local MOC procedure in line with the EGPC Safety Management Guide for MOC. The Procedure must:
  - Cover all changes – permanent and temporary.
  - Be documented and consist of a structured review process of the proposed change.
- Assign an MOC coordinator and back-up for the department to be the department's focal point for managing change.
- Assign resources to manage changes (e.g., review and implementation).
- Ensures full implementation of this MOC process, including the MOC process flowchart.
- Organize with the MOC Coordinator to develop a Change Review Team, who will have the experience, knowledge and authority to review and approve changes.
- Provide the final approval for the change to be implemented.
- Approve the MOC for closure.

Note: Change approver cannot be a coordinator.

14.5. Types of change

14.5.1. Temporary Change

A change implemented with the intent that the change is applied for a fixed duration. Temporary changes that remain in place after execution/implementation starts for longer than 6 months for personnel change, and 3 months for any other change -unless top management decides otherwise- should be subject to the full permanent change procedure (i.e., MOC). Temporary changes (including removal, disabling, bypassing or modifying an emergency shutdown device or system or personal changes) are included in the scope of the D&WO MOC process. The defeat or bypassing of such devices for servicing only is not part of the MOC process. Rather, a local process should be established for review, authorization and documentation of such activity.

After the 3 or 6 months' time the change should be properly reviewed and either:

- Granted an extension, by maximum one month, can't be repeated, while providing documented justification.
- Be managed as a permanent change.
- Reverted to its original condition.

With due regard to the 3 or 6 months threshold, the basic intent is to ensure temporary changes are restored to specifications at the earliest opportunity without need for extension.

A temporary change is subject to the same evaluation as a permanent change.

14.5.2. Permanent Change

A permanent change is one, which once implemented, is a permanent feature of the design, organizational structure, operation or procedural control of drilling operations, associated site infrastructure or supporting services

Changes that are not a replacement-in-kind and are permanent organizational changes and are required to be assessed under the departments MOC process.

This change should be raised when the intention is for the change to remain for a period greater than 3 or 6 months, where no further modification is required or planned.

14.5.3. Emergency Change

Any change that must be actioned immediately to maintain safe and environmentally sound operations by correcting existing conditions that form an immediate danger to the health and safety of personnel, potential for major equipment and/or property damage, potential for major production loss, or serious environmental impact.

To be classified as an 'Emergency Change', the change must meet the following itemized criteria:

- The need for the change shall be urgent.
- The change shall be perceived, both by the initiator and the approver as not to otherwise compromise safety/health of persons or protection of the environment or asset/equipment damage.
- Must be authorized by the Department and Division Heads, the MOC Coordinator and the Drilling Rig Foreman.
- The original set up shall be returned once the emergency situation is over.

If the change needs more time, it can be raised either on a temporary or permanent basis after handling the initial emergency in hand, and ensuring safety of personnel, major equipment and/or property, major production loss, and preventing environmental impact.

14.5.4. After emergency change

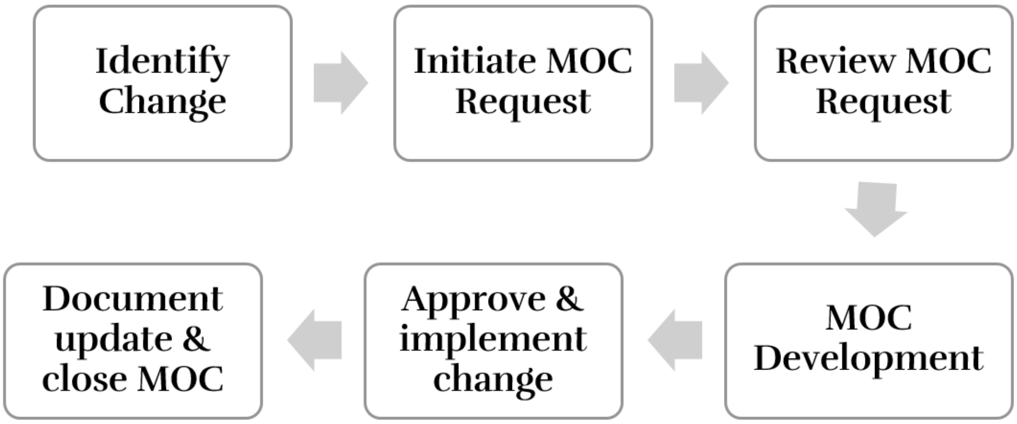
- Change request shall be approved by the PIC considering of all possible consequences of the change and where applicable, consultation with requester and responsible HSE personnel.
- The "Emergency" though recorded in the Operator's/Shift logbook shall however be routed through the normal Change Assessment and Closeout process at the earliest opportunity.

- For Emergency changes implemented during 'non-working hours', this shall be upon resumption of the following work day.
- The change request can be implemented by the PIC with the approval of only, however, it will be valid for up to 24 hours, by which time it must be have been assessed and approved following the due process.
- After the emergency ends, the change must be identified and evaluated according to the actions taken.

14.6. MOC Procedure:

It consists of a six (6) step process as shown in the figure and listed below:

The following section describes in detail the Departments change management process.



14.6.1. Identify Change

14.6.1.1. Categorize Change

- Determine whether the change is replacement-in-kind or not.
- The basis for the change must also be captured (i.e., why or what is the need for the change) according to 8 key categories: Safety, Environmental, Security, Compliance, Operational – Production, Operational – Efficiency, CAPEX reduction and OPEX reduction. More than 1 category can be selected here as there may be multiple benefits of the change.
- It is expected that in the explanation section, detailed description shall be included, on how the change will impact the category selected and any supporting information attached as necessary.
- Provide justification for the change, identify the priority and describe the required change (i.e., description; justification; present situation; proposal and work scope). Identify stakeholders affected by the change, and the type of impact, if any, i.e., QM-HSE, costs, etc.

14.6.1.2. Assign a Permanent or Temporary Category

Assign a permanent or temporary category to the change. The change can be either temporary or permanent as per the definitions section 14.5.

14.6.1.3. Initiate MOC Request

Initiate the MOC request by discussing it with coordinator to assess the benefits and determine if it is safe, filling in the MOC Change Request Form, attach any relevant documents.

14.6.1.4. Obtain Primary Approval

- The initiator and coordinator, perform a Primary Hazard Analysis for the proposed change. They should review previous department MOC requests to see if there have been similar proposals submitted and any lessons learned from these (accepted or rejected and the reasons why).
- They then determine if the MOC required escalation to the next management level based on

the risk assessment checklist in the Department's MOC form.

Note: Approval of the Change Request is approval for further detailed engineering work to be carried out to gain a better understanding of the task. It is not an approval for the work to be implemented.

14.6.2. Initiate MOC Form

The Change Request Form needs to be filled in with the relevant information. The form must contain the reasons for the change and a description of the benefits that this change could have and any consequential changes should also be identified.

Attach all the change related documents that will clearly identify and describe the change purpose and support the change, such as (but not limited to):

- Drawing/illustrations
- Data sheets
- Organization chart and position descriptions
- New procedure, etc.
- Investigation reports
- Vendor information
- Technical data for equipment
- Photographs

14.6.2.1. Submit Idea to the MOC Coordinator

- The Change Initiator completes and submits the Change Request Form along with the related documents to the Department's MOC Coordinator for review and further processing.
- The changes should be reviewed by the MOC Coordinator with the aim of determining if a similar change has taken place before or if there are any conflicts. The MOC Coordinator has the first opportunity to not only record the change but also review the basis of the change and determine if it is suitable.
- Each MOC should be given a unique tracking number to allow it to be tracked to completion.

14.6.3. Review MOC Request

MOC is reviewed by the initiator presenting the idea to the Change Review Team, who decides whether it needs to proceed to the design step.

14.6.3.1. Review Process for MOC

The Change Initiator presents the proposal to the Change Review Team.

The information should include:

- A description and purpose of the change. This should include the potential benefits for the change.
- Technical basis for the change, i.e., safety, financial, environmental, etc.
- Impact upon health, safety and environmental (QM-HSE) considerations.

The CRT's first review of the proposed MOC is to determine whether it should proceed from the conceptual idea stage to planning and implementation.

The CRT review the basis of the proposed MOC to determine:

- The potential impact, and also dictate what types of risk assessments and studies may be required.
- If the proposed change idea will achieve the intended benefit. A high level assessment of whether the proposed change will provide the stated benefit, if the change can be done in reality and if it can be sufficiently resourced.
- The Approver may take part in the CRT debates, to determine if they are also satisfied with this change to take place.
- The proposed change should be agreed to proceed, the CRT may also assign the CIT and provide direction as to the type of risk assessment or the type of engineering or feasibility study required to be performed.

14.6.3.2. Document the MOC

The decision for whether to proceed with the change to the implementation stage needs to be documented and recorded. The change request form should be updated after the review is completed with the comments that the CRT recommends and approves to proceed to the implementation stage.

If the idea is rejected, feedback should be provided to the Change Initiator for the reason of the rejection.

MOC Implementation – The MOC is developed by the CIT to determine if a risk assessment or other engineering studies are required. If so they undertake the risk assessment and required studies and develop plans for the ideas implementation.

14.6.3.3. Determine Risk Assessments and Engineering Studies

All proposed changes should be assessed for risks. The risk assessment should identify the hazards that have been created by the change and that may affect the management system, and the corrective action(s) that need to be implemented to eliminate or reduce the risk.

The Implementation Team need to determine which type of risk assessments (e.g., PHA/ HAZOP etc.) are suitable for the type of change being proposed while ensuring that all actions from the risk assessments and engineering studies are addressed.

14.6.4. Develop Plans for Implementation

- The implementation team develops plans for execution, which must include the conclusions from the risk assessments and engineering studies performed.
- The plans should be specific, measurable, achievable, and realistic and time bound (SMART).
- The implementation plan should also include a communication plan which includes (i.e., communication, awareness, training, etc.) as to who needs know the change and how this is done.

14.6.5. Approve and Implement Change

CRT determines if the plan meets the original intent. The final authorization is given by the Department Head/ approver to proceed.

14.6.5.1. Presentation of the Plan

CIT presents the plan to the CRT (including any options and outcomes from the risk assessment and engineering studies performed) for approval.

The CRT must check that all recommendations from performed studies are completed and that a plan is in place for follow up on recommendations that can only be completed during or after the implementation. These recommendations still need verification that they are complete prior to the close out of the MOC.

This is the final approval step by the CRT.
CIT prepares the following documentation as applicable prior to the meeting.

- Cost estimate.
- Detailed scope of work/procedure.
- Detailed schedule.
- Impact analysis.
- Manpower requirements.
- Communication plan (communication; awareness; training needs, etc.).
- Documentation updates.

14.6.5.2. Authorization to Proceed from the CRT

The CRT provides the authorization to proceed to implementation. This is on the basis that all actions from risk assessments and other relevant studies are completed.

14.6.5.3. Authorization to Proceed from the Division Head/Approver

The Division Head may also be part of the CRT, but as the change affects their area they should be the final approver to decide that the change can proceed. It is important that the Division Head signs on to approve the change, as it is taking place in their area, and they will have the best situational awareness regarding whether the change can take place safely.

14.6.5.4. Allocate Resources then Implement

Sufficient resources for the implementation of the change must be assigned to perform this to completion.

Items to consider for the plan for change are as follows:

- Staff – qualification and allocation of responsibilities.
- Business issues – business interruption and reputation.
- Procedures – review, modify, and update where needed.
- Hazard information – communicate new workplace hazards.
- Training and communication – all affected personnel.
- Product documentation – update product documentation as appropriate.
- Asset or equipment data – revise all drawings and other pertinent data.
- Installation plan.
- Document updates – process safety information must be available and up to date prior to commissioning.
- Commissioning procedures.

14.6.6. Document, Update and Close the MOC

Document, update, and close the MOC by checking that communication of the change is completed, including any required training, all documents are updated, and it is confirmed that the process has been completed, and the MOC is closed.

14.6.6.1. MOC Communication

- The change must be communicated to all affected personnel.
- Communication shall be performed through formal channels (e-mail, official signed documents, etc...) to keep records for documentation.
- Awareness and Training should be considered for all personnel affected by the change. The training must provide sufficient detail to allow for personnel to interact with the change safely.
- The Change Implementation Team must coordinate with the Training Department to prepare training material if additional training is required. Training matrixes and training records shall also be updated.
- Competency and training requirements are determined by the MOC process/form.

14.6.7. Update all Documents

The Change Implementation Team must have all documentation updated and must inform the MOC coordinator when this is complete.

Documents to update could be as follows:

- Drawings for equipment, etc.
- OEM certification and documentation including operating procedures.
- Inspection and maintenance records.
- Training matrix.
- Emergency response plans.

14.6.7.1. Confirmation of Completion

- Once the verification is complete, the MOC coordinator can recommend to the Department Head/ approver that the MOC should be closed.
- The MOC cannot be closed out until all items and recommendations previously identified have been completed and all documents are up to date.

14.6.7.2. MOC Closure

Once confirmation that the change is complete the Department Head approves the MOC closure and records should be kept for reference purposes.

14.6.7.3. MOC Status

There are 3 statuses that a change can be in at the closeout phase to be tracked in the MOC register:

- Executed – This indicates that the change was approved at the assessment phase and has been fully engineered and implemented
- Cancelled – This indicates that the change has been approved at the assessment phase however, has been cancelled for other reasons. Details of the justification for cancelling the change shall be attached to the Closeout documents.
- Rejected – This indicates that the change has been rejected at the Change Assessment phase. Details of the justification for rejecting the change shall be attached to the Change Closeout document.

14.7. MOC Evaluation

- The effectiveness of MOC shall be evaluated during the annual internal audit of every department.
- QMS sections shall prepare a tracking document for MOC stages status.

14.7.7.1. Tracking and Document Numbering

All MOC forms and documents shall be submitted to the document control team for record-keeping for MOC 10 years

The MOC proposal shall be registered with a definite identifying number. Each MOC shall be designated a unique number utilizing the following numbering system to maintain uniformity.

14.8. Guidance on Applying MOC Scope

14.8.1. Changes Requiring Use of Formal MOC Process

14.8.1.1. Changes to process safety system design, function or information.

- Instrumentation - if changing device range, multiplier, measuring unit, or resetting alarm set points, such as changing a PSHL, LSHL, or PSV if outside the current operating range or changing equipment trip set points.
- Permanent by-passing of any safety system device. (Temporary bypassing of safety systems for routine testing, maintenance, or start-up purposes is excluded; but to be recorded as per Permit to Work Procedure.)
- Changes to any other safety critical equipment, including equipment trip settings.

14.8.1.2. Construction of new production or process facilities or new projects tied into existing facilities.

- Modification of existing facilities / process, whether temporary or permanent, including changes to plant lay-out, materials of construction, their specifications, etc.
- Enhancement of plant capacity beyond the design and what has already been evaluated.
- Changes in operating conditions that could cause equipment or systems to be operated beyond their rated capacities (pressure, temperature, flow rate, etc.), created by:
- Newly drilled well
- Re-completed well
- Well work-over
- Increased flow from adjoining facility
- Change in composition of flow from adjoining facility.

14.8.1.3. Equipment changes / modifications that cause changes to pressure relief requirements.

- Any changes to Safety Critical Equipment (SCE) such as Fire & Gas Detection Systems, Emergency Shutdown Systems, PSV's etc.
- By-pass connections around equipment normally in service or removing equipment from service.
- Changes to emergency response equipment, fire-fighting services; deluges, monitors and pumps etc.

14.8.1.4. Operations outside the scope of current procedures.

- Operation outside the safe operating envelope, i.e., operation outside the safe upper and lower limits of key parameters such as flow rate, pressure, temperature, level and composition.
- Introduction of new or different process chemicals (where composition, function, or reaction is changed)

14.8.1.5. Equipment changes (general)

- Valves - of style, material, pressure rating, size, packing, seals.
- Piping and flanges - of size, schedule, material, flange rating, facing, or gasket type. Pumps and compressors - of materials (including internals), flange size, rating, capacity, head, or type of seal.
- Drivers - of horsepower rating, motor electrical rating classification, or lubrication system change.
- Vessels/tanks - of nozzles, service or configuration, Maximum Allowable Working Pressure, or relief capacity or welding on shell, head, or walls.
- Permanent removal from service - of pumps, compressors, vessels or tanks.

14.8.1.6. Operational Procedures

Procedural changes, operational software, computer or Program Logic Controller control scheme, or resetting control parameters outside of normal high or low limits and other technical changes that deviate for the design intent, including process control and emergency shutdown software/programs.

14.8.1.7. Process Chemicals

New chemicals or additives or new catalysts

14.8.1.8. IT Changes

A change is any scheduled addition, deletion or modification to any component or services of the IT hardware and software infrastructure, excluding like for like changes.

14.8.1.9. Maintenance

In-service welding on live equipment, or changes to standard welding procedures on vessels or other certified equipment.

14.8.2. Examples of Changes requiring MOC

A Management of Change form should be completed for those changes satisfying or exceeding the following criteria;

- Any change to the design basis or detailed design specifications,
- Any change that significantly changes the design function, design configuration, or operation of the system,
- Any design changes to a mechanical control, operating, or shutdown system after it has been through a HAZOP study and approved,
- Any change in the trip set point of equipment protection device,
- Any change that affects another related area of responsibility (an interface issue),
- Any change to the structural, mechanical, electrical, instrument, or other "approved for construction" drawings or specifications that has a significant impact,
- Any change that has an impact from a health or safety standpoint,
- Any change that affects the regulatory status or environmental impact (e.g., emissions, waste

disposal, consumption, and efficiency).

14.8.3. Examples of Changes in Well Operations

Well operations are subject to continual change to do the following;

- Increase efficiency,
- Improve productivity and safety,
- Reduce environmental impacts and
- Improve HSE performance.

Any of these changes can introduce new hazards or compromise the safeguards built into the original design.

A change in well operations occurs whenever equipment or services are replaced or added. It may also occur as a result of differences between predicted and actual geological conditions. Typical instances in which MOC would be needed include, but are not limited to, the following;

- Major drilling changes,
- Modification of existing wellhead equipment,
- Pore pressure, fracture gradient significantly higher or lower than predicted, and changes to PDDP Worksheet,

Note: "Significant" is defined as that could reasonably require a change to the well casing program, affect the ability to control a well kick, require a change in pressure rating of equipment, or a change in produced fluid type and corrosion concerns, etc.

- Changes to the AFE Scope Summary, such as changes in Well objectives, Drilling deeper and Side-tracks,
- Introduction of new or different chemicals (chemical substitution) and
- Equipment failures to critical equipment requiring change to standard operating practice or policy

14.8.4. Examples of "Like For Like" (LFL) Changes

LFL which includes changes that use the same size, material, style, type, range, chemicals, control, operation, procedure, etc., do not require an MOC. Examples of LFL are as follows;

14.8.4.1. Valves

Replacement of existing valves with valves of same design capabilities (e.g., pressure rating, materials of construction, nominal size, style, and flange facing),

14.8.4.2. Piping and flanges

Replacement piping and flanges must have matching nominal size and bore with the piping and flanges being removed. The manufacturer may differ but the weight, schedule (wall thickness), flange rating, facing and materials of construction must be the same

14.8.4.3. Pumps and compressors

replacement must match the existing equipment in pumping capacity, materials of construction, seal type, suction and discharge rating and flow rate and must also have same environmental standards (e.g., emissions and lubricants),

14.8.4.4. Electrical

replacement of a breaker or fuse with one of the same rating, replacement of wiring with same gauge and current carrying rating, or replacement of insulation

14.8.4.5. Electric motors

Replacement must have matching materials, horsepower, efficiency, voltage rating, RPM, and frame size and type,

14.8.4.6. Instrumentation/safety systems

new control valve with no change in design capabilities or materials of construction, adjusting operational set points within established operating range, or routine testing and maintenance of safety devices and alarms,

14.8.4.7. Chemicals

Changing the recommended concentration of a chemical additive, within established limits or product name change without alteration to composition,

14.8.4.8. Operations

variations in operating parameters (flow, pressure, and temperature) that are within the design limits as described in current standard operating procedures and

14.8.4.9. Inspection & Maintenance

Changes to schedules and scopes that are within written risk based policies.

Note: Hot taps and stopples on pipelines are covered by Operations and Maintenance procedures and do not require an MOC. The reason the hot tap/stopple was needed may well require an MOC but not the hot tap/stopple itself when restricted to pipelines and pipe work. However, satisfactory risk assessment has to be carried out to manage all risks during the hot-tapping/plugging operation.

A15. Deviation Permits

EGPC

15.1. Scope

This procedure applies to all departments within D&WO; including EGPC facilities, Contractors, and Service Companies.

- Deviation permits are for a specific time frame and shall not exceed 24 hours in duration.
- In case the Deviation Permit exceeds 24 hours, a new risk assessment along with senior management approval are required.

15.2. Purpose

The purpose of this procedure is to ensure all deviations from requirements specified in the contract or documented policies and procedures is assessed and approved by an authorized person for a specific period.

EGPC Risk Management shall be utilized to determine the potential severity and/or consequence of the incident or potential incident.

When determining the risk associated with any planned deviation, it is the potential likelihood and severity of the incident that may result as a consequence of that deviation that must be assessed for risk.

"Changes" to process technology, chemicals, equipment, procedures, facilities, buildings, personnel, contracts, and/or organizations shall be by EGPC Management of Change procedure.

15.3. Definitions

15.3.1. Authorized Person:

A person who is charged with the authority to control all aspects of the activity concerned and who holds the information required to determine the consequences of the deviation.

15.3.2. Deviation Permit:

A written authorization to depart from specified requirements for a specified time.

15.3.3. Deviation permit time period:

It is the duration through which the deviation is valid and cannot be used after this period without escalated approvals

15.4. Responsibility

The Concerned Manager of each department of a drilling contractor and service provider is overall responsible for the implementation of this procedure.

15.4.1. Deviation Permit Initiator

- Responsible for identifying a need for deviation.
- Describes and/or documents the proposed deviation and communicates it to the approver.
- Performs the required risk assessment and identifies proper controls to reduce the risk to as low as reasonably practicable (ALARP).
- Fill After Action Review.

15.4.2. Deviation Permit Approver

The concerned department/ the process owner: is responsible for assuring that the deviation risk is as low as reasonably practicable.

15.4.3. Deviation Permit focal point

A group responsible for providing recommendations, monitoring, and verifying the deviation permit during the whole processes. Also is responsible for logging, tracking, following up on all the deviation permits regularly.

15.5. Procedure

15.5.1. Initiation of a Deviation permit

- To request approval to deviate, the initiator shall initiate a Deviation permit request.
- To assist in expediting the Deviation Permit review, attach all supporting documentation (Example; Formal Risk Assessment).
- The Deviation Permit request justification shall include a discussion of the impact of approving the deviation.
- Document and support cost benefits or penalties by addressing the following items but not limited to:
  - Decrease in safety or reliability.
  - Adverse environmental impact.
- The Deviation Permit request shall always identify and analyze other alternatives to deviate.

15.5.2. Deviation Request Submittal and Logging

- Submit a Deviation Permit request and all supporting documentation to Operations and HSE Heads.
- The Deviation Permit request shall be assigned a tracking number and routed to the appropriate subject matter expert within the organization to analyze the request and recommend disposition.

15.5.3. Deviation permit Request Analysis and Conditions of Approval

- The Operations and HSE heads shall be assigned the task of review and analysis of the deviation request.
- If the review determines that the Deviation Permit request is not required, due to misinterpretation or misapplication, it shall be returned to the Deviation Permit Originator with an explanation.
- If the review and analysis determines that the deviation request is not supported and should be rejected, it shall be returned to the Originator with a documented explanation of the rejection.
- If the review and analysis determines that the deviation request should be supported and approved, then the analysis shall be documented. If the Operations and HSE heads have identified specific factors or concerns, these shall also be included in the analysis documentation. If there are conditions associated with the approval of the deviation request, the Deviation Permit requester shall insert them.

15.5.4. Waiver/Deviation Request Approval:

- The deviation request is approved by obtaining signatures from the Department Manager(s), Operations Manager, HSE managers, and managers of the proponent department affected by deviation from the requirement and the QHSE department.
- Approval to deviation shall be approved to minimize cost and schedule impacts, new projects are encouraged to obtain a deviation permit request approval during Project Proposal development.

15.5.5. Waiver Request Rejection and Appeal

- The requester shall accept the rejection recommendation or resolve the issue with Operations and HSE heads.
- If the requester disagrees with the rejection decision, he shall submit a documented appeal for reconsideration to the company Chairman. The final authority to approve or reject shall rest with the company Chairman.

A16. Rig Move Requirements

EGPC

16.1. Scope

Ensure safe rig move for all drilling and workover operations and provide Guidelines for all concerned personnel/departments who supervise the rig move.

16.2. Purpose

The purpose of this document is to provide a specific plan of action for personnel working on the Rigs when conducting the rig transportation, This document provides the general safety rules and guidelines for rig move operations, each specific task required to safely perform the specific job steps involved in performing the rig move operation must have a rig specific Job Safety Analysis (JSA) available at the rig site and must be reviewed by the supervisor in charge prior to the start of each task in a Safety Meeting , to ensure that all personnel involved in the task understand their roles and responsibilities to perform the task in a safe and efficient manner

Also this document applies to all rig-contractor personnel employed at the rig and third party contractors, during the rig move activity, it also applies to personnel who are hired specifically for this purpose. The responsibilities include proper planning for rig move, assessing and arranging the available resources for various jobs, coordinating with the Rig Operators HSE department and assigning specific chores to key personnel is the rig contractor main responsibility.

16.3. Responsibilities

16.3.1. Rig contractors PIC responsibilities

- Give clear safety instructions to all personnel performing the rig move.
- Oversee the entire rig move operations and coordination with the rig operators drilling supervisor.
- shall ensure that loading/moving/off-loading the critical lifts, such as Rig sub-base and mast will be under the close Supervision of the tool pusher and truck pusher (no delegation is acceptable) and shall be conducted as per OEM plan and procedure or approved lifting plan by rig operators drilling and HSE department
- Ensure that a "Lifting Plan" is prepared and approved for each critical lift. This operation must be conducted under close supervision from both the Rig contractors Move Supervisor and lifting engineer and rig operators appointed lifting engineer
- Ensure all wide loads are moved in a convoy with a lead escort vehicle and a follow escort vehicle. Escort vehicles shall equipped with rotary beacon lights.
- Conduct and document daily safety meeting at the beginning of each day of the rig move with all drivers, Rig Operators drilling supervisor, Contractor drivers, rig contractors truck pusher and rig contractors HSE engineer to discuss all safety aspects and lessons learned from previous rig moves also to emphasize safety during the rig move.
- Ensure all rig move equipment (winch trucks, trailers, prime movers, loader forklifts and cranes) and their operators are in good working order, certified and meet Rig operators and EGPC specifications and Asset Integrity Standards.
- Ensure that two escort trucks pushers vehicles for each convoy contain up to 6 trucks and three escort truck pusher vehicles for convoy contain more than 6 trucks
- Ensure that the total number of rigs move trucks per each convoy do not exceeding 15 trucks
- Ensure full arrangement with rig operators security representative before any convoy movement
- Make sure that the assigned truck pusher is competent to perform the work and has good work experience
- Ensure that the move permit was issued before starting rig move
- Ensure that the black road check points is notified " if applicable"
- Ensure that all Trucks head lights are switched on whenever travelling.

16.3.2. Truck pusher responsibilities

- Provide full support to the rig contractors PIC and rig management as needed.
- Ensure safe driving at all rig move stages through close supervision of drivers.
- Enforce high truck utilization and distribute work evenly among drivers.
- Escort the loaded truck/trailer in-group between old and new location following the Rig Move route map
- Ensure that traffic is allowed to get around wide loads whenever possible by pulling off to the side of the road at the specific points identified in the rig move route map.
- Ensure that none of the drivers leave the old location without his permission.
- Contact the road services mechanic for any truck/trailer break down.
- All trucks that contain wide load shall adhere to the approved rig route (No deviations from approved rig routes are allowed). All trucks that don't have any wide load can utilize any road/route after approval from the Rig operator's security, Drilling and HSE departments.
- Make sure that two escort truck pusher vehicles are presents for convoy contain up to 6 trucks and three escort truck pusher vehicles for convoy contain more than 6 trucks
- Make sure that by any mean the total number of trucks per each convoy do not be more than 15 trucks
- Make sure spacing between travelling trucks is at least 45 meter
- Two convoy leaders should be present during each rig moves.

16.3.2.1. Rig Operators drilling supervisors

- Shall obtain the rig move route map from rig contractors PIC and contractor HSE engineer at least 10 days prior to the drilling rig move and no less than 2 days prior to the work over rig move and 1 day prior to the pulling unit move
- Must make sure that the move map shall show all move needed information
- Arrange the TBT (tool box talk) with the rig contractors PIC" tool pusher", truck pusher, contractor HSE engineer to discuss rig move plan and route survey and responsibility prior the pre-move meeting
- Ensure No moves are allowed in foggy, rainy and dusty weather where visibility is less than 100 m. It is the rig operators PIC "drilling supervisor" responsibility to ensure that there is adequate visibility for the move
- Rig Operators drilling supervisor, truck pusher and the contractor HSE engineer & Rig operators HSE engineer and production engineer ensure that all overhead cables are to be approached with caution. The rig move has to stop, and then proceed slowly under the cable, to avoid any excessive movement of the rig suspension.
- If the decision to cut power from the overhead is taken the rig operators PIC shall take the necessary steps with the concerned department and production departments to cut the power and pass safety under the overhead
- Conduct daily rig move meeting with the tool pusher, the truck pusher and HSE assigned personal to drilling
- Alert all field departments/and concerned parties about the rig move & make sure security gates are closed before moving
- In the deserts concessions rig operators PIC shall make sure that the security gates are closed before each convoy moving
- In the agriculture concessions rig operators PIC shall make sure that the governmental authorities and check points were notified
- Ensure that the move permit is issued before any move
- Ensure that TBT be conducted & review move plan package presented by tool pusher.
- Ensure that lowboy trucks equipped with ramp arm mechanism are not included in the move trucks as it is forbidden to use within petroleum sector
- Perform all the task assigned to him as per rig operators assigned responsibility

16.3.3. Rig Superintendent

- Responsible for the preparation for the Rig Move, for:
  - Coordinating the Rig Move with the Operator.
  - Approving the final Rig Move Plan.
  - Coordinating with the Senior Tool pusher to make sure that personnel and equipment are in place.
  - Coordinating the requirements for transport units with the Transportation Section.
  - Making sure that all relevant matters are attended to in a timely and cost-efficient manner.

16.3.4. Transportation Superintended (Rig Move)

- Ensure that all required rig move equipment's are available according to the rig move plan.
- Ensure that all rig moves plans are completed and reviewed by the concerned rig STP and superintended.
- Ensure that the estimated rig move cost is within the agreed –up on budget

16.3.5. Rig Contractors maintenance team

16.3.5.1. Senior Mechanic

- Shall fulfill his job description during the Rig Move activities and not limited to:
  - Be responsible for securing and protecting all mechanical equipment from damage during the rig mobilization.
  - Performing the carrier checklist & mast raising/lowering checklist.
  - Inspect all Rig Move transport equipment upon arrival at the location and report the rejected points to the PIC immediately.
  - Participate in the daily rig move meetings and coordinate rig up and maintenance plan with the rig STP.
  - Coordinate and plan ahead with the rig superintendent for the required spare parts needed for any maintenance or overhauling which will be carried out while the rig move operations.
  - Follow the rig move plan as per STP instructions.
  - Shall insure that all planned/outstanding maintenance on PMS was done during rig move.

16.3.5.2. Senior Electrician

- Shall fulfill his job description during the Rig Move activities and not limited to:
- Be responsible for securing and protecting all electrical equipment from damage during the rig mobilization.
- Be responsible Rig down and rig up all electrical equipment in safe manner.
- Ensure that the grounding system shall be the last system removed at rig down and reverse the process at the power up.
- Participate in the daily rig move meetings and coordinate rig up and maintenance plan with the rig STP.
- Coordinate and plan ahead with the rig superintendent for the required spare parts needed for any maintenance or overhauling which will be carried out while the rig move operations.
- Follow the rig move plan as per STP instructions.
- Shall insure that all planned/outstanding maintenance on PMS was done during rig move.

16.3.6. Rig contractors radio operator

Perform all the task assigned to him as per responsibility check list and to be included in the Move permit.

16.3.7. Rig contractor's HSE

- Shall fulfill his job description during the Rig Move activities and not limited to:
- Ensure proper handling and filing of all HSE-related documents as he acts as HSE Document Controller.
- Ensure the preparation of all the necessary PTW, safe job analyses, and also the required lifting plan.

- Participate in holding safety and morning meetings for the rig move crews to emphasize the work to be done.
- Participate in rig move equipment inspection and report the finding to PIC.
- Ensure that all Drivers and Operators understand the task at hand.
- Assist Supervisors in holding Pre-Tour Safety Meetings with all involved personnel.
- Report and investigate all incidents that may occur during the Rig Move.
- Ensure the implementation of drops inspection prior to the rig down/rig up.
- Prepare all required fall protection equipment needed for the rig move operations and make sure it is being used by the crew properly. It is recommended to refer to the rig specific fall protection plan.
- Validate that the rig STP and truck pusher sign off for approving all the loaded trucks before departing from the old location.
- Review the third party blacklist.
- Make sure all safety equipment's are in position as per safety equipment layouts.
- Prepare with help of the rig STP the rig specific emergency response plan for the current new well.
- Ensure all personnel wear Personal Protective Equipment (PPE).

16.3.8. Rig operators HSE assigned engineer

- Make sure the HSE representative is presence in the move route survey in a timely manner
  - Participate in the pre-move meeting with the rig operators Drilling supervisor and production engineer
  - Take a close look and discuss all the JSA and work permit done by the contractor
  - Make sure the responsibility checklist is discussed in the meeting.
  - Oversee all the inspection reports of all lifting equipment and lifting tools
  - Make sure that truck load survey sheet is filled correctly
  - Ensure that lowboy trucks equipped with ramp arm mechanism are not included in the move trucks as it is forbidden to use within petroleum sector

16.3.9. Rig Operators Production Department PIC

- Make sure the production representative is presence in the move route survey in a timely manner
- Attend the pre move meeting with the rig operators drilling supervisor and drilling HSE engineer
- Make sure that all the ramps (if needed) meet the production and projects departments requirement
- Witness the crossing of any pipeline
- In desert concessions he shall make sure that the overhead height is correct in the route survey and in the truck survey sheet.

16.3.10. Rig Operators Security Representative

- Attend the route survey
- make sure security gates are closed before moving
- Perform all the task assigned to him as per responsibility check list to be included in the move permit documents

16.4. Requirements

Every Rig contractor shall have a rig specific documented procedures for their move/ transportation which shall cover the following at minimum:

- Rig specifications such as
  - Type of rig (i.e. Drilling, Workover, Offshore)
  - Rig HP (i.e. 2000HP)
  - Rated drilling depth
  - Manufacturer, Year built
  - No. of rig move loads

- Drilling equipment
- Mast height
- Top drive/Kelly
- No. of mud pumps and its type
- Power supply equipment
- No. of main power supply
- No. of emergency power supply
- Well control equipment (No. of BOP rams and its types)
- Down hole equipment (i.e. Drill pipe , Drill collar)
- Storage facilities
- Liquid Mud (i.e. 2000 BBL)
- Drill water (i.e. 2000 BBL)
- Fuel at rig site and main camp (I.e. 2000 BBL)
- Fresh water at rig site and main camp (I.e. 2000 BBL)

• Roles and Responsibilities
• Rig Move procedures
  - Raising and lowering the mast procedures
  - Loading and offloading procedures
• Rig move picture book
  - The rig move picture book provides all of the necessary data for each load in the rig that is lifted during the rig move, as seen in the example below.

7	BOP				
Weight	Length		Width	Height	
14 t	1 m		1 m	3.5 m	
Lifting Point	Hard Eye 1X2-leg 18 Ton	Single Crane Lifting	Shackles 2 x 12 t	Chain & Binder	Low Boy Load
					

16.5. Procedures

16.5.1. Planning and sequence of operation

In order to maintain regularity and standardization of operation during the planning of the operation, it is recommended to follow the planning and sequence of operation as outlined below.

The planning and sequence of operations have been divided into the following 14 steps:

	Actions
Pre-move	Route survey and obstructions identification, road hazards identification
Preparation	Pre-move meeting
	Pre-move loads (Non critical load)
	Critical loads
	Rig Move Approval Procedure
	Line of responsibility & Job Descriptions
	Risk Assessment & Job safety analysis
	Rig move plan
	Permit to work (move)
	Precaution to be taken Rig release
Execution	Rig move Rig move truck type Transportation Incidents Emergency Response Plan (ERP)
Reporting	Post Rig Move report

16.5.2. Rig Move Route survey and Hazards Identification

The route survey committee shall include Rig contractor Tool pusher, truck pusher and HSE with rig operator's security, HSE & production representatives,

They must carefully check the condition of rig move route the following items must be checked in the preliminary rig move route map:

- Obstructions (low overhead power lines, etc.)
- Road hazards (gates, condition of roads, etc.)
- Emergency safety services along the rig move route in case of emergency traffic or within an agriculture areas such as ambulance, fire truck etc.. at least 2 points per each road
- Nearest ambulance position in case of emergency
- Any ramp needed and if yes state the type of the ramp
- Are there any soft sands in route?
- Is the rig move route a company/army/public other company road?
- Is there any areas that should be prepared or adapted for the rig move?
- Is there any area without network coverage if yes? Where?
- Is there any other rig move occurs at the same time?

Rig Operators drilling supervisor shall obtain the Rig Move Preliminary Route map along with the route survey sheet from survey committee not less than 10 days prior to drilling Rig Move and not less than 2 days prior to work-over rig move to be able to arrange and conduct Pre-move meeting excluding pulling unit.

Rig contractor tool pusher will provide a copy of the preliminary Route map along with the route survey to rig operator's security, HSE, Production representative, prior conducting Pre-move meeting

Rig operators drilling supervisor, contractor HSE engineer, Tool pusher and Truck Pusher shall hold a tool box talk prior to the Pre-move meeting, the minutes of this meeting shall be documented on a specific Meeting Form and should be signed off. This meeting will include, but not be limited to the following topics:

- load out sequence
- Additional equipment needed for the move (i.e. – lifting equipment and their corresponding lift plans).

- Lessons learned from the last rig move.
- Any special inspections (i.e. – derrick) or repairs to be completed before next rig up.
- Precautions of the Green hand employees (short service employees) with limited experience which may require additional supervision or other extra precautions.
- Number of Required trucks, three escort vehicles.
- All vehicles shall be in good operating conditions.
- personnel responsibilities
- Number of loads and will it be on one convey or two
- Forklifts and crane operations safety precautions
- Rig move convoy shall contain Min. of 2 trucks and maximum of 15 trucks
- drug test to drivers if needed

All concerned Departments from Rig Operators and contractors shall accept the route survey after ensure that it is the safest route to the new locations

Pre-move meeting shall be conducted in the rig site not less than two weeks before drilling rig release and One day before work over rig release

16.5.3. Pre-move meeting

A combined Pre-move meeting between (Rig operators HSE, drilling supervisor, production, security, and rig contractor's management) shall be conducted. This meeting shall include Discussion of:

- Rig move responsibilities,
- Rig Move Route for Pre-Move Loads
- If The Same Route Apply for The Critical Load or will make another route for critical loads,
- The Wide loads move procedures,
- Confirm that Risk assessment and job safety analysis for all rig move activities were issued
- Communication
- Potential hazardous that could be encountered and how to avoid them.
- Previous rig move incident lessons learned
- Dealing with Public and public roads and sensitive agriculture areas " if any "

Note:

- Rig operator and Rig contractors PICs shall make sure to break the job down into basic steps. A balance needs to be struck between making the steps too general, resulting in missing specific steps and their associated hazards, and too detailed, leading to excessive steps.
- It is recommended that each job instruction should be limited to a maximum of 5 steps. If more than 5 instructional steps are required, it is usually better to break the job instructions into multiple jobs.

16.5.4. Pre-move loads (non-critical load)

Rig loads, which can be moved at any convenient time, can also move during the rig move. Usually, those non-essential pieces of equipment that can be rearranged in a rig move plan in order to expedite the Rig Move process "if applicable "and after get official written approval from the rig Operators HSE, security and Drilling department this load will be moved under the name of (Free Runners), the load does not exceed any of the following dimensions.

- Height: Truck with load is low with +3.2 meter between any overhead obstructions identified along the route.
- Width: Whole truck/car (width) do not exceed one lane of the road and the load does not exceed the width of the truck (No wide load permitted).
- Length: No overhangs the rear, no front overhangs
- Speed: All vehicles speed shall cope with rig operator speed limits

All rig move Drivers must have been briefed as to the correct routes, and supported by a copy of the Route Survey and must adhere to that route with NO deviations / Violations or stoppage under no circumstances unless obtaining permission for that in writing by the rig operators security, HSE and drilling departments

Note:

Loads which are out of dimensions due to height or length (all wide loads) must be considered as critical move. All wide loads must form part of a rig move convoy.

16.5.5. Rig Move Approval Procedure

- Rig Operators shall Create a specific move permit including but not limited to the following:
- Rig Move Description and approval authorities including HSE, Drilling, Production, security and Area authority
- Route survey sheet "Route map "
- Pre-move meeting report form
- Personal responsibility check list
- Rig Move safety equipment checklist
- Rig Maintenance team checklist
- Rig HSE team checklist
- Rig Radio operators checklist

If the rig operators has more than concession and the move will take place between two different concessions the following should sign the rig move permit:

- Rig operators shall assign HSE, production, security Destination location Representative and Arrival HSE, production, security Arrival Location Representative

All above mentioned representative shall present in the Pre-move meeting in rig site.

Note

- After Rig Contractors performing risk assessment on moving with wide loads on blacktop, agriculture or desert roads and all rig up/down operations
- Rig Operators HSE General manager & Operation general manager shall approve wide load move in written before starting the wide loads move by email or other written equivalent method.
- In case of pipe crossing ramp required for both oil pipeline and underground gas pipeline, the ramp shall be constructed after consulting rig operators projects department. Line of responsibility & job description.

16.5.6. Pre move general instructions

- The operator/rig operators informs the rig STP with the new location coordinates.
- The concerned rig STP obtains the necessary approvals from the operator.
- STP to issue the rig operators's rig move documents
- The rig management requests a truck pusher to assist in surveying the route to the new location, if needed as per route survey checklist.
- STP to conduct the Route survey accompanied by the Truck Pusher.
- The new location is to be approved by the rig STP to fulfill Rig contractor minimum requirements for building locations mentioned in the relevant rig move manual.
- The rig STP and truck pusher prepare the rig move plan to be sent to the rig superintendent and transportation rig move section for review.
- The reviewed rig move plan is to be presented to operations management and top management for approval (Less time and more bonus).
- Estimate rig move time is based on distances, number of loads, etc.
- The rig move section checks if any traffic permits are needed for the rig move.
- The rig STP orders, prior to the rig move, the sufficient diesel quantity to be consumed during the rig move operation, as per the rig contract.
- The STP ensures/delegates another person to ensure that all transportation rig move equipment are inspected as per Rig contractor checklist to assure compliance with company standards.
- The STP/rig safety engineer prepares all the necessary safe job analysis and risk assessments for the critical lifting operations.

16.5.7. Overhead Line Clearance

Where there are OHL crossing the intended route, the following must be noted and reported by the rig operators' representatives during Route Survey:

- The location
- Height of line
- Sagging of the line

All overhead cables are to be approached with caution. Each truck has to stop then proceed slowly under the cables to avoid any excessive movement of the Truck suspension, it is the responsibility of rig contractors truck pusher, tool pusher and HSE engineer to finally determine if the rig can pass safely under overhead cables, as outlined in the below table:

Line voltage	Absolute limit of approach
34.5	1.53 meters (5 feet)
69	1.7 meters (5 feet 7 inches)
115	1.95 meters (6 feet 5 inches)
230	2.7 meters (8 feet 8 inches)
380	3.65 meters (12 feet)

16.5.8. Rig move Permit

Rig move permit will be required prior to commencing the rig move operations. The new rig move permit "blanked form" will be provided by the rig operators to the rig contractors PIC and should be available at the Rig contractor HSE and tool pusher offices and rig operators PIC "Drilling supervisor "on location, the Rig contractor PIC who is the person responsible to initiate the rig move permit

16.5.9. Work permit validity

The maximum validity period for a rig move permit will be determined according to the number of convoys required to transport a rig, 10 days' shift maximum and must be written at the permit.

For any work not completed by 10 days, the permit is to be cancelled and a new permit shall be issued. In issuing the new Permit the Authorized Signatories will check for changes to the work scope and consider the effects any new or existing hazards may have on the work.

Work Permits are automatically suspended in the event of an Emergency or Emergency Exercise. In this case all work shall cease and persons proceed as per the site Emergency Procedure. Move Permit shall be reissued by the Authorized Signatories signing.

16.5.10. Rig move procedures

Precautions to be taken before Rig release & during Rig move shall be PPE, SJA, Communication and supervision, as covered in this manual.

- The rig STP and truck pusher hold safety and morning meetings for the rig crews and move crews to emphasize the work to be done.
- The truck pusher checks and approves all the loaded trucks departing from the old location.
- The rig STP and truck pusher sign off for approving all the loaded trucks before departing from the old location.
- The rig materials man/STP prepares a packing slip for all the involved rig move trucks in case of long rig moves. Three slip copies are to be distributed as follows:
  - One copy to be kept in the rig files.
  - One copy to be handed to the truck company.
  - One copy to be sent to the rig contractor's transportation department.
- The rig STP delegates a competent person to acknowledge receipt of the items mentioned in the packing slip at the new location, in the same condition as before being loaded.
- Rig move operations are conducted during day light only, without any excuse.
- The truck pusher prepares a rig move report with all the transportation rig move equipment

involved on the rig move.

16.5.10.1. Lifting Operations

Load Positioning

- The second most important task after loading is to secure the loads on the trucks; inadequate load securing can result in severe damage to loads, leading to time delays and additional costs. The main purpose of load securing is to ensure that the load remains in its intended position, is neither self-damaging nor damaging to other loads.
- This normally happens by securing the loads to tie-down lashings which are visually inspected before securing loads to them, also the truck's anchoring points are to be visually inspected before being used.
- If the load is correctly restrained, it will never shift for fall off or move in all expected driving conditions, including a full braking stop. Drivers should travel slower when cornering and on rough roads as increasing the speed will increase the forces that cause the load to shift.
- It doesn't matter how heavy or big the load is, when truck brakes, accelerates, changes direction or travels over rough road surfaces, forces are generated which are far greater than the friction between the load and the truck bed. If the load is not secured properly, it will move or fall.
- Liquid filled tanks shall be loaded on the low boys instead of 3-Axle trailers and a minimum two securing chains as a lashing method fixed to the low boy chassis shall be used;
- Tanks filling shall be less than 20% of its capacity or more than 80% of its capacity. (<20% or >80%).
- The overall height of the loaded truck must not exceed 7 meters.
- The load must be positioned to maintain adequate stability and not to overload tires and axles.
- The load is positioned so that its center of mass is as low as possible and no offset to one side of the vehicle to reduce the truck tendency to overturn when cornering.
- Loads are being placed on truck such that heavier loads to be placed behind lighter loads.
-

Load Restraining

Loads must be restrained to prevent unacceptable movement during all expected road conditions.

The load restrain system must, therefore, satisfy the following requirements:

- Any load movement is to be limited, such that in all cases where movement occurs, the truck stability and weight distribution cannot be affected.
- The weight of the load alone cannot provide enough friction to restrain it during normal driving, additional restraint must be used.
- The load is only considered to be secured, if the adequate restraining devices (chains, webbing belts, chocks, netting, twist locks etc.) are installed.
- Checker plate steel beds are just as smooth as flat steel beds. Loading directly onto steel beds is to be avoided and wooden strips are to be used to prevent steel to steel contact.
- Wooden strips are placed at lashing positions and if loads are multilayer, the upper rows of wooden straps are placed directly above the bottom ones.
- Never use ropes in securing loads as they are extremely ineffective for restraining loads because of their very low amount of tension regardless how tight it looks.
- Lashings shall be one of three types of material:
  - Steel chain 13 mm (1/2 inch) in thickness with grab, winged or claw hooks is preferable to use
  - Steel Chains should be 10mm (3/8"), Grade 70 Transport Chain but more lasing will be needed
  - Webbing straps of 50 mm width or greater.
- Steel chain shall not be used to restrain steel pipes or tubular - webbing straps shall be used.
- Lashings shall be attached to the lashing points on vehicles and equipment to provide adequate restraint and prevent damaging the equipment.
- In cases where no lashing point on the equipment is available, the equipment shall be restrained at a point that will not move during transport with respect to the lashing

During the journey, some loads can move, shift or lashings can loosen and objects can fall off accordingly. The driver periodically checks the loads and lashings during the journey and after emergency/severe backing, to ensure that the load does not fall off.

Recommended checking distance interval is 50 KM for black road and 25 KM for rough roads the driver shall stop the vehicle in a safe place to inspect the load.

Steel Chains

For loads requiring steel chains for restraint purposes:

- chains shall of 13 mm (1/2 inch) in thickness, is preferred but the usage of 10 mm (3/8 inch) in thickness is acceptable as long the number of chains with respect to (WLL) is calculated and taking in consideration.
- Grade 80 and grade 100 chains can be used in restrain big loads with respect to the (WLL)
- Chains shall only be used for securing vehicles, mobile plant and equipment, skidded loads, cable reels, and specific heavy loads such as transformers.
- Chains shall not be used to restrain pipes and tubular.
- chains shall not be used for lifting purposes
- When purchased chains shall be supplied with a copy of the manufacturers Shock Testing certificate which shall be retained by the purchaser/owner, and made available for inspection as may be required.

Webbing and tensioners

For loads requiring nylon webbing as a restraint, webbing of a minimum 50 mm width, shall be used. The webbing can be tensioned using either:

- Truck winch on trailer side
- Hand ratchet winch (part of webbing assembly).

The webbing shall be in good condition, not frayed or showing signs of excessive wear, stitching damage or chemical corrosion, or sunlight exposure damage. Damage can be assessed by the hairy appearance of the fibers

Broken webbing even tied together with knots is totally unacceptable. Once webbing breaks, or is damaged to the extent that its lashing capacity is reduced by 10% or more it must not be used, and shall be disposed of:

Chain binders

There are two main types of chain binder:

- Lever type and
- Ratchet type chain binder.

The ratchet type chain binder should be used only when securing short and straight sections of chains. The lever type chain binder will not provide sufficient tension when the chain is short.

Headboards and Loading Racks

Most headboards and loading racks are not strong enough to fully restrain heavy loads under heavy braking. If the load is tied down to provide the required restraint for the Sideways, rearwards and vertical directions, the headboard or loading rack can provide Some or all of the extra restraint needed for heavy braking or minor collisions.

Side Gates

Most drop-in side gates are not capable of restraining tall or stacked loads unless they are supported at the top by diagonal cross lashings to the opposite tie rails or are attached to other structures such as bulkheads or loading racks. When straps are tensioned over the top of opposite gates, they clamp the load together and prevent the gates lifting. If the load is stacked more than gate high, the gates cannot prevent the top layers from tipping sideways

Load Net

- Chemical material, chemical big bags, chemical bags Can be carried in sided vehicles and tankers.
- Fine powdered material (cement contained in silo) should be contained or transported in fully enclosed vehicle bodies such as cement bananas so that no product can fall or dislodge from the vehicle during transport.
- Load covers or load nets are required to restrain loose chemical bags and objects in open topped vehicles to counteract the effect of air flow and rough roads
- The use of 'netting' can be effective for a limited time in restraining chemical bags and small objects. Load netting can be made from closed or open-weave material and can be applied manually. Load nets can also be used effectively for vertical restraint of lightweight bulk loads in open-topped vehicles.

16.5.10.2. Lashing Techniques

Top-Over Lashing

Top-over lashing is a method of securing where lashings are positioned over the top of the goods order to prevent the cargo section from tipping or sliding.

Direct Lashing

If the cargo is equipped with lashing eyes compatible with the strength of the lashing, it is possible to lash directly between the lashing eyes and the lashing points on the vehicle.

Loop Lashing

Loop lashing is a form of sling lashing cargo to one side of the vehicle body, thereby preventing the cargo from sliding towards the opposite side. To achieve double-action lashing, loop lashings must be used in pairs, which will also prevent the cargo from tipping over. Two pairs of loop lashings will be required to prevent the cargo from twisting longitudinally.

Lashing Angles

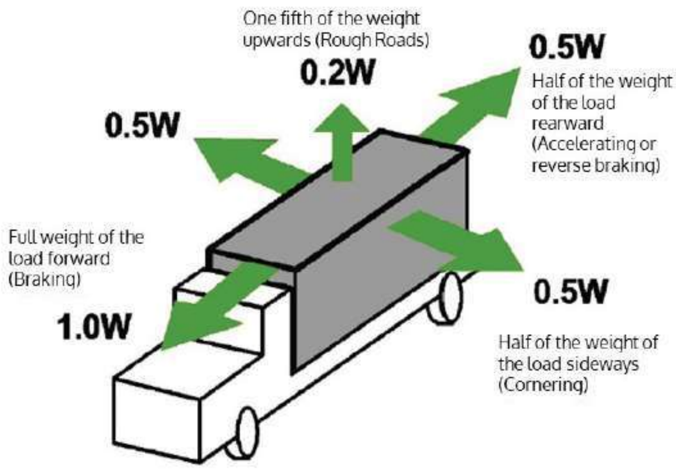
In order to be effective, lashings must be applied in directions that are opposite to the direction in which a load is to be restrained. A lashing applied to keep a load from moving forward needs to be angled such that it is primarily directed toward the rear of the vehicle and not vertically. Direct lashings should be applied in a manner that gives a maximum slope of 1 to 2 in the direction of restraint as shown in figure.

In no case shall lashings applied to restrain loads in the forward and reverse direction exceed 60 degrees. Lashings applied to restrain only sideways movement should be applied to provide a 1 to 1 slope.

Amount of Restraint

Every load shall be restrained. The restraint system shall be strong enough to restrain the load without any movement relative to the vehicle during all expected conditions of operation. This requires a load restraint system strong enough to withstand:

- 100% of the load weight in the forward direction of the vehicle
- 50% of the weight of the load in the sideways directions
- 50% of the weight in the reverse direction of the vehicle
- 20% of the weight in the upward direction



Size mm (inches)	WLL (working load limit) Kg (Pounds)	
	Grade 70	Grade 80
7 (1/4)	1,430 (3,150)	1,570 (3,500)
8 (5/16)	2,130 (4,700)	2,000 (4,500)
10 (3/8)	2,990 (6,600)	3,200 (7,100)
11 (7/16)	3,970 (8,750)	N/A
13 (1/2)	5,130 (11,300)	5,400 (12,000)
16 (5/8)	7,170 (15,800)	82,00 (18,100)

	Synthetic webbing (WLL)
Width mm (inches)	WLL (working load limit) Kg (Pounds)
50 (2)	910 (2,000)
75 (3)	1360 (3,000)

Example:

If a machinery weighs 40,000 lbs. to be loaded on a truck

Forward position (100% of the load weight should be restrain)

Considering 90% lashing effectiveness so 10mm grade 70 lashing will have 5940 lb. WLL (working load limit) & 13mm grade 70 will have 10170 lb. WLL (working load limit)

- 100% of the load will be 40,000 lbs.
- 40,000 / 5,940 lbs. will need 7 10mm grade 70 chain lashing to restrain load in forward direction
- 40,000 /10,170 lbs. will need 4 13mm grade 70 chain lashing to restrain load in forward direction

Sideways and reverse position (50% of the load weight should be restrain)

Considering 90% lashing effectiveness so 10mm grade 70 lashing will have 5940 lb. WLL (working load limit) & 13mm grade 70 will have 10170 lb. WLL (working load limit)

- 50% of the load will be 20,000 lbs.
- 20,000 / 5,940 lbs. will need 4 10mm grade 70 chain lashing to restrain load in Sideways and backward direction
- 20,000 /10,170 lbs. will need 2 13mm grade 70 chain lashing to restrain load in Sideways and backward direction upward position (20% of the load weight should be restrained)

- 20% of the load will be 8,000 lbs.
- 8,000 / 5,940 lbs. will need 2 10mm grade 70 chain lashing to restrain load in Sideways and backward direction
- 8,000 /10,170 lbs. will need 1 13mm grade 70 chain lashing to restrain load in Sideways and backward direction

Lashing Equipment Inspection

As for lifting equipment, lashing equipment can only be relied upon if it is in serviceable condition. The nature of the application, particularly the possibility of the load moving in transit, means that lashing equipment can be accidentally damaged each time it is used. It should therefore be inspected before each use. This need not be a formal inspection and no record is required but trained users should be able to 'cast their eye' over it and check for any obvious damage. It is recommend that lashing equipment should periodically be formally inspected by a competent person and a record made of the result.

Chains and hooks Chains and hooks shall be visually inspected every six months to ensure

- no broken,
- stretched,
- bent,
- damaged or worn
- grooved links (link diameter reduced by 10% = failure),
- No stretched or damaged hooks.

Note: If deemed fit for service chains shall be color coded on the links adjacent to the hooks (as per contractor lifting equipment color codes), with the hooks also color coded.

- Chains "repaired" by welding are unacceptable.
- Chains which fail the inspection shall be scrapped.
- CHAINS FOR LASHING SHALL NEVER BE USED AS LIFTING EQUIPMENT-their method of manufacture and steel type makes them unsuitable for lifting purposes.

The manufacturer's Certificate of Shock Loading shall be obtained at time of purchasing the chain, and be retained for inspection at rig premises.

- Name of the lashing equipment
- Brief description
- Date of inspection
- Result of inspection clearly stating whether the equipment is safe to use
- Name of person making the inspection
- Signature of person making the inspection
- Part number or serial number marked on the chain or in a steel plate attached to the chain.

Webbing

Webbing shall be visually inspected every six months & pre-use checks to ensure the following defects and damage are not present

- cuts of 4 mm or more at the edges of webbing lanyards
- surface abrasion across the face of the webbing and at the webbing loops,
- abrasion at the edges, particularly if localized
- damage to stitching (e.g. cuts or abrasion)
- a knot in the lanyard, other than those intended by the manufacturer;
- chemical attack which can result in local weakening
- heat or friction damage indicated by fibers with a glazed appearance which may feel harder than surrounding fibers
- UV-degradation which is difficult to identify particularly visually, but there may be some loss of color (if dyed) and a powdery surface;
- external abrasion; damaged or deformed fittings
- damage to the sheath and core of the rope
- internal damage
- Surface fibers damaged by abrasion

Vehicle Selection

Select a vehicle appropriate for the actual load to be carried; the following:

- Design and construction of the vehicle; e.g. wood or steel deck, open sided or side gated, high bed or low bed, twist locks fitted, open or closed body, restraint anchorage points.
- Maximum carrying capacity of the vehicle in relation to the weight of the load, -do not overload the vehicle.
- Length, height and width of the vehicle load deck in order that a load can be contained within the vehicle if possible and thus avoid the need for an escort (try to make it non critical load as possible).

16.5.10.3. Escort Vehicles

- The Escort vehicle must have at least two roof mounted amber beacons.
- Vehicles carrying an oversized load shall have, appropriate flags, and placards.
- Wide loads shall have additional lighting and have lit hazard markings and width indicators.

16.5.10.4. Load Height

- A vehicle shall not be loaded to such a height that vehicle stability is affected.
- Overhead power lines present a hazard to high loads, in desert oilfield areas. A minimum vertical gap–to avoid flashover, which can be up to 3.65 meters dependent on line voltage, is required between the point of maximum load height and the overhead power-line
- In order to identify such potential obstructions when planning the movement of loads a pre-movement route survey shall be completed carefully.

16.5.10.5. Rig move truck type

A vehicle shall not carry a load which exceeds its specified loading capacity, the maximum permitted legal load is determined by both the empty weight of the trailer and the drive axle load capacity of the prime mover as stated on their Vehicle Registration Documents. Here are some of different type of moving trucks and its capacity.

Semi-trailers hauled by SINGLE REAR AXLE Prime Movers (4 X 2)

- The maximum safe and legal load depends on the trailer empty weight (and meeting the ROP legal maximum axle loadings,
- Trailer with an empty weight of 9 tones: Maximum allowable load is 29 tones.
- Trailer with an empty weight of 8 tones Maximum allowable load is 30 tones.

Low boy

- Ramp arm mechanize type is prohibited within all rig move belonging to EGPC affiliated companies
- Consideration must also be given to loads with high centers of gravity). Vehicle and load combinations that have a high center of mass will overturn at speeds that are lower than vehicle and load combinations with lower centers of gravity. These types of loads should be carried on a vehicle with a low platform height or on a vehicle with good roll stability.
- Consideration must also be given to loads with high centers of gravity. Vehicle and load combinations that have a high center of mass will overturn at speeds that are lower than vehicle and load combinations with lower centers of gravity. These types of loads should be carried on a vehicle with a low platform height or on a vehicle with good roll stability.

16.5.11. Post move procedure

- The truck pusher and STP conduct a meeting with each other at the end of the rig move and write down any violation or suggestions to improve rig move to be presented to rig superintendent and transportation rig move section to take proper action.
- The concerned rig STP fills in the Rig Move Evaluation Report indicating the performance of the rig move participants.
- The rig STP fills in the Rig Move Fuel Consumption Form - approved by the rig operators representative - and submits it to the relevant rig superintendent who in turn approves and

sends it to the cost control section).

- The rig STP fills in the Rig Move Acceptance Form – approved by the rig operators representative - and submits it to the relevant rig superintendent who sends it to the receivable section

16.5.12. Post Rig Move report

- After completion of the Rig Move a Post Move report is to be made by the contractor tool pusher within 72 hours of the spud-in the next well. (Report attached)
- The purpose of the report is to review all aspects of the move, lesson learned, identify positive achievements and areas for improvement on future moves of that rig.

16.6. Transportation Incidents Emergency Response Plan (ERP)

In case of any transportation incidents, the rig operators drilling supervisor, rig superintendent and HSE manger in addition to rig contractor doctor/ rig HSE engineer .must be reported with the situation.

The following data is to be determined:

- Incident location
- The vehicle's owner
- No. of passengers
- Nearest ambulance location
- Nearest Hospital in the area
- Description of injuries and damages as a result of the incident
- The transportation section (rig move section) calculates the estimated rig move cost as per the truck pusher's Rig Move Report and submits the estimated calculated cost to the rig superintendent.
- The rig superintendent reviews the calculated cost for the involved transportation rig move equipment in accordance to the approved rig move plan.

A17. Emergency Response Plan

EGPC

17.1. Scope

This procedure applies to all emergencies involving operators /contractors Personnel, Assets, Activities, Operations and Business Partners; within rig contractor-controlled areas to respond effectively to incidents that may occur on and around any rig contractor premises. A high degree of emergency preparedness will be maintained at all times on board to handle any arising emergency at the shortest possible notice.

The necessary procedures and plans of emergency preparedness address all emergency cases, resources available and communication required during different scenarios to prompt the first immediate action(s) required.

17.2. Purpose

This Emergency Response Plan (ERP) details the rig contractor and predetermined actions to respond effectively to incidents that may occur on and around any rig contractor's offshore units and to prevent and limit as far as practicable the consequence of an emergency (or crisis) in an organized and integrated manner. To ensure that:

- Clear practical guidance for all personnel who may be involved in an incident to identify their roles and responsibilities in an emergency.
- Key emergency personnel are identified, and their required action(s) are taken on being alerted.
- An adequate level of preparedness and response to Emergency cases.
- Identification of scenarios that may require evacuation from the facility in case of an emergency to avoid or minimize a major accident.
- The agreed lines of communication and emergency rig contractor are established for rig contractor Units and they are ready to respond, as required, to any potential emergency.
- The emergency is correctly categorized and reported through the correct channels.
- Design of safe means for escape, evacuation, and rescue and identification of scenarios that may require evacuation
- The rig contractor Units have been designed and equipped with sufficient emergency response equipment and facilities to ensure the safety of personnel.

17.3. Types of emergencies

- Serious injury, loss of life, missing persons or man overboard.
- Fire / Explosion.
- Total loss or damage that may shut down the unit.
- Loss of well control.
- Blowout.
- Gas release
- Environmental Pollution.
- Evacuation.
- Collision with another vessel
- Loss of Stability
- Punch through
- Security Incident

17.4. Emergency Response Rig contractor

The rig contractor operates on a governance structure that provides an integrated benchmarked capability to enable the company to:

- confirm the nature and extent of the event
- Take control of the situation
- contain and manage the incident
- communicate with the investors, concerned other parties, and the public

17.4.1. Management Emergency Rig contractor:

Certain types of serious emergencies will require the activation of an operation room designated as an Emergency Operating Centre (EOC) in the head office as follows:

- The Chairman (Head of Emergency Rig contractor – Incident commander)
- Emergency Manager
- Logistic Coordinators
- HR Director
- QM-HSE Director
- Security Office
- Head office Doctor

17.4.2. Unit Emergency Rig contractor:

The Emergency Operating Center Team shall muster in the Radio Room; the team comprises the following:

- PIC (OIM \STP) in the absence / incapacitated of the Person in Charge (OIM); the Off-duty Tool Pusher shall replace him.
- Off-duty Tool Pusher (Second Commander)
- Rig Engineer
- On / off-duty Radio Operators - Internal and External Communications
- Operator's Representative
- Barge Engineer is the (Damage Controller / On Scene Commander) in Emergency cases
- In the absence / incapacitated of the Operator's Rep the OIM shall replace him.

17.5. Activation of Emergency Operating Centre

Certain types of serious emergencies will require the activation of an operation room chosen as an Emergency Operating Centre (EOC) in the head office as follows:

- The Head of Emergency, when contacted in an emergency:
  - Shall report immediately to EGPC emergency room.
  - Shall determine the seriousness of the situation and decide whether EOC should be activated.
  - Shall inform the Operations Management, and duty support personnel and then proceed to EOC to assume incident commandment.
  - May delegate the Chief Operations Officer or the Operations Manager as Incident Commander to ensure such responsibility until he arrives at EOC.
- The Duty Superintendent shall inform duty support personnel and others as may be instructed by the Incident Commander.
- Rig Superintendent shall open up a control room, and write up the time(s) and first event(s) of the emergency on the situation log report. Then he shall ensure that all maps, charts, drawings, emergency procedure manuals, and other data sources relevant to the situation are made readily available.
- The Incident Commander may designate, as necessary, a person or a team to proceed to the location of the emergency to coordinate the action(s) being taken on site or to act as a source of information of the status of the situation.
- The STP/OIM at the emergency site will provide a report at the end of the emergency detailing times and relevant points of meeting/decisions/occurrences.

17.6. Emergency Response Arrangements

In all foreseeable circumstances the prior arrangements provided for emergency response, and the management of these arrangements, will ensure, as far as is reasonably practicable, the safety of all persons involved in activities within the business unit. These arrangements include:

- Planning for emergencies.
- Emergency Response Training for key personnel.
- Scheduled emergency drills at the unit site.
- Major emergency planning and simulation with Operator participants.
- The detection, prevention, mitigation, and control of incidents.

- Informing all personnel of what their response to emergencies shall be.
- Informing all personnel of hazardous conditions, their response, and accounting for all personnel following an incident.
- Recovery of personnel.
- Escape routes.
- Coordination of the response and the cooperation of all those involved.
- Support and response resources available.

17.7. Safe work practices During Emergency cases

The following safe work practices should be followed during emergency cases on the unit:

- Muster crew for accountability.
- Cancel all work permits and secure work that could present an additional hazard or increase the danger of the emergency.
- Stop all welding and buffing, the use of non-EX lights, and portable electric devices.
- Evacuate all personnel from confined spaces, and ensure that all power is shut off to equipment.
- Close all manholes, hatches, and watertight doors.
- If applicable, bypass valves must be opened or closed as required.
- Where there is incomplete work (e.g., handrails and deck plate's removed, dismantled, or nonoperational machinery or equipment) that could be hazardous to personnel, fence off the area and post warning notices.

17.8. Procedures

Each rig contractor shall have a specific ERP including at minimum:

- Introduction
- Scope and Purpose
- Emergency response rig contractor
  - Alerting process
  - Roles and responsibilities
  - Unit Specific ERP contact list
- Emergency drills
- Mustering Process
- Emergency communications
- The unit emergency data include:
  - Emergency response scenarios
  - Specific Safety / Fire Fighting equipment layout
  - Station Bill

A18. Incident Reporting and Investigation

EGPC

18.1. Scope

This procedure details the process for timely reporting of all incidents and near misses. It applies to Incidents involving Drilling contractors and Service companies.

18.2. Purpose

- Ensure that personnel who sustain injury or become ill receive the best possible care as soon as possible.
- Guide the preparation, dissemination, and review of incident reports.

18.3. Responsibilities

18.3.1. Rig Operator's HSE Manager

- It is the responsibility of the HSE Manager to ensure that all incidents involving injuries, illnesses, environmental spills, loss of primary containment, dropped objects, property damage, fire or near miss incidents that occur at the rig site, the associated rig camp or non-routine rig operations are notified to the EGPC in Cairo.
- Rig PIC shall follow up and ensure that all contractor injuries and incidents are reported to the rig operator's top management verbally, through E-mails, or electronic systems if applicable.
- Ensure that all other departments will appropriately report and investigate all incidents on time.
- Ensure the affected department shall classify incidents to define the levels of notification, investigation, and recording activity that EGPC requires.
- IADC incident reporting guidelines will be used as a reference.
- Take immediate action when any injury or potential major incident is found to have occurred, but was not reported. Determine the factors that contributed to the non-reporting.
- Follow the requirements stipulated in IADC incident reporting when assigning/determining classifications of incidents.
- Ensure that the department training policy mandates training for incident reporting responsibilities.

18.3.2. Rig operator's person in charge "DSV"

- Promote immediate reporting of all near misses by communicating to employees and contractors, the positive aspects of near miss reporting. This can be accomplished through positive reinforcement at safety meetings.
- Ensure that all employees and contractors working in the D&WO facility are aware of their incident reporting responsibilities to the facility PIC. This will first be communicated during the site safety orientation.
- Notify all injuries, loss of primary containment (spills, leaks, etc.), unsafe conditions, near-misses, and incidents to his direct manager.
- Take immediate action for any injury or potential major incident that is found to have occurred, but was not reported. Determine the factors that contributed to the non-reporting and submit the information to the Division Head, who will determine the corrective action that will be applied.

18.3.3. Contractors

Each rig ontractor is responsible for reporting contractor incidents by E-mail within 24 hours of the incident.

18.4. Incident Categories

18.4.1. Fatality (FTL):

A fatality is a work-related injury or illness that results in death. Fatalities are included when calculating the Lost Time Incident (LTI) incident rate and frequency rate.

18.4.2. Lost Time Incident (LTI):

A work-related incident (injury or illness) to an employee in which a physician or licensed health care professional recommends days away from work due to the incident.

Note: Time away from work on the day of the incident is not considered in determining Lost Time Incidents (LTI). Time spent traveling, undergoing evaluation, awaiting medical evaluation results, or otherwise seeking medical treatment should not be counted as a Lost Time Incident (LTI) when considering LTI classification.

18.4.3. Restricted Work/Transfer Case (RWTC):

- A Restricted Work/Transfer Case (RWTC) occurs when an employee cannot perform all of the routine job functions but does not result in days away from work. An RWTC occurs when, as a consequence of a work-related injury or illness:
  - The employee is temporarily assigned to another job
  - The employee cannot perform all of his routine job functions for all or part of his work shift
  - The employee works his regularly assigned job but cannot work the full shift/tour
- Restricted or light duty the day of the injury or illness does not make the incident a recordable Restricted Work/Transfer Case (RWTC). If the employee continues under restricted duty the day after the incident, the case becomes a recordable Restricted Work/Transfer Case (RWTC).
- When an employee experience minor musculoskeletal discomfort such as muscle pains or strains, a physician or licensed health care professional determines whether the employee is fully able to perform all of his routine job functions, and the employer assigns work restriction to that employee or restricts the employee’s job functions, to prevent a more serious condition from developing, the case is not recordable as a restricted work case.

18.4.4. Medical Treatment Only (MTO):

- Any work-related injury or illness requiring medical care or treatment beyond first aid (regardless of the provider of such treatment) that does not result in a Restricted Work/Transfer Case (RWTC) or Lost Time Incident (LTI).
- Medical treatment does not include first aid treatment even though provided by a physician or registered professional personnel.
- For record-keeping purposes Medical Treatment Only (MTO) does not include:
  - Visits to a physician or other licensed healthcare professional solely for observation consulting;
  - Diagnostic procedures such as x-rays and blood tests, including the administration of prescription medications used solely for diagnostic purposes (e.g., eye drops to dilate pupils); or any treatment contained on the list of first-aid treatments.

18.4.5. First Aid (FA):

Any treatment of minor scratches, cuts, burns, splinters, and so forth, and any follow-up visit for observation. The following are generally considered first-aid treatments:

- Using a non-prescription medication at non-prescription strength regardless of route of administration, i.e. oral, injection, ingestion, inhalation, or absorption. Medications available in prescription and nonprescription form, the use of or a recommendation by a physician or other licensed health care professional to use a non-prescription medication at prescription strength is considered medical treatment for recordkeeping purposes).
- Administering tetanus immunizations (other immunizations, such as Hepatitis B vaccine are considered medical treatment);

- Cleaning, flushing, or soaking wounds on the surface of the skin;
- Using wound coverings such as bandages, Band-Aids TM, gauze pads, etc.; or using butterfly bandages or Steri-Strips TM (other wound closing devices such as sutures, staples, etc., are considered medical treatment);
- Using hot or cold therapy;
- Using any non-rigid means of support, such as elastic bandages, wraps, non-rigid back belts, etc. (devices with rigid stays or other systems designed to immobilize parts of the body are considered medical treatment);
- Using temporary immobilization devices while transporting an incident victim (e.g. splints, slings, neck collars, backboards, etc.);
- Drilling of a fingernail or toenail to relieve pressure, or draining fluid from a blister;
- Using eye patches;
- Removing foreign bodies from the eye using only irrigation or a cotton swab;
- Removing splinters or foreign material from areas other than the eye by irrigation, tweezers, cotton swabs, or other simple means;
- Using finger guards;
- Massages (physical therapy or chiropractic treatment are considered medical treatment for record-keeping purposes);
- Drinking fluids for relief of heat stress.

18.4.6. Property Damage:

An incident that has resulted in damage to property or equipment.

18.4.7. Environmental Incident:

Any incident that results in damage/pollution to the environment. This includes ground, air, and water.

18.5. Incident Reporting Procedure

Incident reporting is the documented process of notifying top management or a designated person of an incident for evaluation for further actions. The process involves an initial notification and a structured incident reporting process that takes into account the date and time, a brief description of the incident, the type of activity, the work equipment being used, the employees involved and the consequence of the incident. Incident reporting can be both internal and external; internally to persons within an rig operator and externally to an enforcement authority once an incident falls within a given category.

18.5.1. Initial notification

Incident reporting begins with an initial notification, which is done immediately to a designated person e.g., a safety officer or an immediate supervisor. The purpose is to preserve all relevant data, knowledge, and evidences about the incident by the designated person to prepare for the next stage of incident reporting i.e. preparing a preliminary incident report. The initial notification takes the form of an email, phone call, or face-to-face communication.

18.5.2. Preliminary incident report

is a report put together to provide preliminary information about the incident to top management-both the rig operator’s and contractor’s-for evaluation and decision-making on the need for further actions – given that, not all incidents deserve the same level of action. Once initial notification has taken place, the supervisor or the safety officer must send the preliminary incident report to the HSE Manager-both the rig operator’s and contractor’s, the most senior management personnel e.g., MD, and all relevant persons as per procedure within 24 hours. The purpose of a preliminary incident report is for severity evaluation by the top management to decide on the needed relevant actions.

The preliminary incident report should include:

- Date and time of the incident
- Name of the person(s) injured (or the names of the person(s) at risk in the case of a near miss)
- Witness name(s)
- Name of supervisor
- Description of injuries (or the potential injuries that could have happened in the case of a near miss)

18.5.3. Simplified steps to follow when reporting:

- Employee or witness to an incident informs his supervisor.
- The supervisor notifies the Drilling Foreman.
- The Medic provides treatment as required.
- The rig Foreman shall notify via telephone, SMS, email or messenger the Rig Superintendent for all Loss Time Incidents (LTIs) and property damage as soon as practicable but in no case more than 12 hours after he has been advised.
- For Incidents that occur on a contractor rig involving Service Company employees or equipment, the rig Foreman will ensure that the Service Company conducts a thorough investigation as per the Service Company Investigation policy and provide a complete investigation report. This report will be sent to the Rig Superintendent.
- Any injury/incident that is found to have occurred but was not reported will be reviewed by Drilling Management to determine the factors that contributed to the non-reporting.

18.6. Incident Investigation

18.6.1. Investigation Process

The incident investigation process consists of 5 steps:

- Immediate actions
- Investigation planning
- Data collection
- Data rig operator and analyses
- Actions and Report.

18.6.2. Investigation Planning

- Nominate the investigation team and allocate roles/tasks
- Develop an investigation plan
- Identify information to be collected
- Review previous incidents (similar incidents, reoccurring incidents, personnel involved).

18.6.3. Level of Investigation

The level of investigation is determined based on the actual severity. However, this level may be increased by considering the probability and potential consequences of incidents.

Similarly, the causes of a near miss can have great potential for causing injury and ill health. When making your decision, you must also consider the potential for learning lessons. For example, if you have had several similar incidents, it may be worth investigating, even if each single event is not worth investigating in isolation. It is best practice to investigate all adverse events which may affect the public.

Also, the investigation level shall consider the probability and potential consequences of incidents that may require an increase in the level of investigation.

The tables below will assist you in determining the level of investigation, which is appropriate for the incident. Remember you must consider the worst potential consequences of the incident

Table 1: Determine (Actual / Potential) Consequences and severity of the Incident that occurred.

Severity	Consequences (Actual / Potential)		
	Harm to people	Asset Damage	Environmental Impact
A Negligible	First Aid / Near Miss	< $1,000	Oil Spill (offshore sheen) or < 1 barrel on land.
B Low	MTO	> $1,000 ≤ $10,000	Oil Spill < 10 barrels
C Medium	Restricted Work Injury	> $10,000 ≤$100,000	Oil Spill <10 barrels > 100 barrels.
D High	LTI / Partial Disability	>$100,000 ≤$1,000,000	Oil Spill <100 barrels >1000 barrels.
E Major	Fatality (Multiple) / Permanent Disability	> $1,000,000 impact	Oil Spill >1000 barrels.

18.6.4. Investigation Team

For an investigation to be worthwhile, it is essential that the management and the workforce are fully involved. Level of investigation shall be determined by the incident severity.

Severity	Level of investigation	
	A Negligible	In a minimal level investigation, the relevant supervisor will look into the circumstances of the event and try to learn any lessons which will prevent future occurrences.
	B Low	Low level undertaken by: Business unit PIC: Team Leader HSE Engineer: Team Member Maintenance team: Team Member Any other member requested by investigation team leader
	C Medium	Medium level undertaken by: Rig SUPT / project manager.: Team Leader HSE section head : Team Member Business unit PIC: Team Member HSE Engineer: Team Member Maintenance team :Team Member
	D High	High level undertaken by: Operations Manager : Team Leader HSE Manager: Team Member Rig SUPT/ project manager.: Team Member Field HSE Head: Team Member Any other member requested by investigation team leader
	E Major	Major level undertaken by: Chairman: Team leader Chief Operation Officer: Deputy Team Leader EGPC Representative : Team member QM-HSE Director: Team member Operations Manager : Team member HSE Manager: Team Member Rig SUPT/ project manager.: Team Member Field HSE Head: Team Member Any other member requested by investigation team leader

Any other members may include Technical Superintendent, 3rd party representatives, Engineering Department representatives, or experts.

18.6.5. Data Collection

- Conduct interviews and collect statements from those involved in the incident and any witnesses. Written statements of those involved should be sought as soon as possible following an incident and to be signed by the witnesses. After reviewing the statements, further questions may be developed.
- Collect all available and relevant information such as photographs, videos, sketches, SMS documents, details of the environmental conditions at the time, measurements, records (training, CVs, JMS, maintenance, inspection certificates,...etc.), data or physical evidences,

layouts, or any other relevant information required.
- Tools required for an investigation, depending on its nature may include Digital cameras, Portable lights, Sketch pad, or Portable gas / vapor detector.
- All information gathered should be factual. Speculation, opinions and assumptions based on facts are not to be included in the information gathered.

18.6.6. Data Rig operator and Analysis

- Develop a timeline and/or sequence of events (if required). It is critical to establish the sequence of events leading up to the occurrence of the incident and immediately after the incident occurred.
- The level of detail will depend on the severity and complexity of the incident. When constructing a sequence of events the critical information is who did what, when they did it, where did it occur and what else contributed to it occurring. A sequence of events should be written out.
- Using the proper Root cause analysis technique to identify why the failures occur? What were the deficiencies or absent defenses? What did people do or not do, systems failures, decisions, training deficiencies, etc. that allowed the incident to occur? This analysis can be identified through the following:
  - Immediate causes are the obvious causes that gave rise to the event itself. These will be the things that occur at the time and place of the accident. It is common to think of these causes in terms of unsafe acts and unsafe conditions.
  - Underlying or root causes are the things that lie behind the immediate causes. It must be present for the incident to occur. If you can confidently say that the incident could have been prevented/or the likelihood drastically reduced but for this factor, then it is a root cause. There may be more than one root cause identified during an investigation. Often, root causes will be failure in the management system such as lack / insufficient / noncompliance with procedures or instructions.
- All other factors are causal factors. Their presence or absence made the event more or less likely to occur, or more or less severe.
- When analyzing data ensure that the information is both valid and reliable. Valid means that the evidence is directly related to the investigation. Reliable means that the evidence would be the same no matter who or how the evidence/data was collected

18.6.7. Immediate Actions

- Secure the scene to eliminate danger to personnel, and preserve evidence to prevent being altered.
- Check injured persons and provide first aid if safe to do so
- Notify key personnel

18.6.8. Actions and Report

Once the investigation is completed, effective and clear actions shall be developed through (Aegis) by tapping the HSE drop list, selecting add new Incident then go through the last page "Action items", they should be: "SMARTER"

- Specific; what exactly are the recommendations aim to fix?
- Measurable; Recommendations / corrective actions shall be incorporated into internal inspections. To examine if the same factors that caused the original incident still exist.
- Accountable; Each corrective action/recommendation must have an accountable person in charge responsible for implementing it, this person could also manage the communications aspect in keeping the workplace informed on progress and completion.
- Reasonable; when establishing the recommendations / corrective actions, the method and cost of its implementation should be considered before presenting these solutions to management.
- Timely; each corrective action/recommendation must have a time for completion target; the duration of the implementation depends on the priority and the possibility of achieving it. Assigning a reasonable period for completion helps make the recommendations a little more manageable and therefore likely to be accepted and completed.

- Effective; by taking Risk Assessment as a reference, an effective recommendation should be reducing both the severity and frequency of a future incident.
- Reviewed; examining if the recommendation is still in place and doing what its role or not, examining recommendation effectiveness should be in internal inspections and follow-ups.

All corrective actions should be based on the Hierarchy of Control to ensure the most effective controls are being considered. Actions should prevent the reoccurrence of the incident in both the short and long term.

- Short-term actions are those that prevent the causes of an incident from remaining or developing further. They may include site communication or temporary barricades.
- Long-term actions eliminate the causes of the incident and generally take longer to implement. These may include engineering controls, elimination of a hazard, and capital projects.

Effective actions are those that:

- Eliminate the cause of the incident in a practical way;
- Are lasting and required minimal maintenance; and
- Are readily implemented.

18.6.9. Approval

- The Investigation Team shall issue the final investigation report which shall be printed out, approved, and signed by all involved investigation team members and reviewed and approved by the QM-HSE Director and Concerned Department Manager
- Incident investigation shall be submitted within two weeks after the incident happened, however, it may be extended, if the evidence is still being collected.

18.6.10. Final Incident report

- The final incident report should include the following sections:
- Final incident classification
- Incident Location
- Date and time of the incident
- Name of the person(s) injured (or the names of the person(s) at risk in the case of a near miss)
- Witness name(s)
- Name of supervisors
- Description of injuries (or the potential injuries that could have happened in the case of a near miss)
- A detailed description of the incident covering:
  - Sequence of events
  - Results of the event
  - Observations of anything unusual before, during, or after the incident
  - Observations of safety equipment or procedures used
  - The affected or involved person(s) version of the events
  - Witness statements
  - A detailed description of the treatment after the incident, which may include:
  - The reasoning behind the decision to call or not call emergency services
  - How the injury (if any) was treated
  - How the area of the incident was controlled, cleaned up, or rectified
  - A post-analysis of the incident
  - The root cause(s) of the incident
  - Any health and safety breaches that may have contributed to the incident
  - The hazards identified
  - How to remove the hazards or mitigate the risks
  - Photographs (if relevant and where possible)

N.B: For class E incidents, EGPC has the authority to form an official investigation team or delegate the investigation to the drilling contractor/service company investigation team, and a single final investigation report shall be created by all involved parties and approved by EGPC.

18.7. Incident Rate Calculations

Incident rates can be calculated based on frequency or incidents.

18.7.1. Frequency Rate

The Frequency Rate includes applicable incidents per 1,000,000 man-hours worked.

18.7.2. Calculate the Lost Time Incident (LTI) Frequency Rate using this formula

[Number of Lost Time Incidents (LTI) including Fatalities (FTL) multiplied by 1,000,000 and then divided by Total Hours Worked = Lost Time Frequency Rate]

18.7.3. Calculate the Total Recordable Frequency Rate (TRFR) using this formula

[All applicable recordable incidents [(MTO+RWC+LTI+FTL) multiplied by 1,000,000 then divided by Total Hours Worked = Recordable Frequency Rate].

18.7.4. Incidents Rate

The Incidents Rate includes applicable incidents per 200,000 man-hours worked. The two numbers are essentially the same, except Frequency Rate is five (5) times the Incidents Rate.

18.7.5. Calculate the Lost Time Incidents (LTI) rate using this formula

[Number of Lost Time Incidents (LTI) including Fatalities (FTL) multiplied by 200,000 and then divided by Total Hours Worked = Lost-Time Incidents Rate]

18.7.6. Calculate the Total Recordable Incidents Rate (TRIR) using this formula

[Recordable incident data [(MTO+RWC+LTI+FTL) multiplied by 200,000 then divided by Total Hours Worked = Recordable Incident Rate]

18.7.7. Calculate the Days Away Restricted or Transferred (DART)

With applicable incidents (FTL+LTI+RWC) that involve days away from work but do not include MTO cases using this formula, [Total number of applicable DART cases*200,000)/Total hours worked = DART Rate

18.8. Safety Communication / HSE Alert

- HSE Alert shall be established to circulate the gained information/lessons learned from incidents that occur on any units and to ensure that learning points are communicated to all rig operator personnel, HSE Alert shall be issued for:
  - Recordable Incidents
  - Occupational Health Incidents
  - Material Damage Incidents (for damage has cost of repair above 10,000 $)
  - Significant Environmental incidents
  - HIPO
  - Transportation incidents (involving the total loss or major damage i.e. roll over).
- HSE Alert shall include;
  - Date and Time of incident.
  - Description of the incident
  - Actual and possible outcome
  - Cause(s)
  - Action(s) to avoid recurrence
  - Photo/ Sketch if applicable
- HSE Alert shall be posted at visible place(s) on the rig where personnel can have access to it such as; communication boards.
- Rigs/Units are required to use the lessons learned as an improvement to their specific operations i.e. include learning in Rig/Unit action items (when applicable).

18.9. Incidents Tracking and Follow-up

- The Action party shall take actions within the target date with the related evidence. If not, actions will be escalated to his line managers, according to the rig operator hierarchy.
- Approver shall verify the implementation of actions with its related evidence.
- The Concerned Supt. /Concerned Manager shall follow up on the actions status.
- When this implementation requires involvement of several parties, an action plan shall be in place and executed. This plan shall be formalized and followed-up on the HSE Committee Meeting.

A19. International, National standards and Legal compliance requirement

EGPC

19.1. Scope

This procedure is established to demonstrate all organizations' commitment to follow legal and other obligations when executing their business.

Each drilling contractor/service company working under EGPC authority shall have a procedure in place that addresses significant laws, rules, and other requirements and ensures they are factored into the QHSE management system.

19.2. Purpose

Ensure that both rig contractors/operators comply with all applicable international, national, and legal standards and regulations.

19.3. Egyptian laws and regulations

All drilling contractors and service companies shall obey all Egyptian rules and regulations, which include, but are not limited to, the following:

- Labor Law: No. 12/2003 and its amendments and executive regulations
- Environmental Law: No.4/1994 and its amendments and executive regulations
- Commercial Law: No. 17/1999 and its amendments and executive regulations
- Social Insurance Law: No. 148/2019 and its amendments and executive regulations
- Customs Law: No.207/2020 and its amendments and executive regulations
- Tax Law: No. 91/2005 and its amendments and executive regulations
- Traffic Law: No. 66/1973 and its amendments and executive regulations
- Waste Management Law: No. 202/2020 and its amendments and executive regulations
- Other related HSE laws and regulations.

19.4. International Standards

- ISO standards
  - Quality Management System Requirements, ISO 9001:2015
  - Environmental Management System Requirements, ISO 14001:2015
  - Occupational Health and Safety Management System Requirements, ISO 45001:2018
- HSE standards such as
  - OSHA – Occupational safety & health association
  - DROPS reliable securing
  - ANSI (American National Standard Institute)
  - ASTM (American Standard for Testing and Materials)
  - National Electric Code Article 500 HASAWA (Health and Safety at Work etc. Act)
  - EU (European Union)
  - HSE (Health& Safety Executive)
  - SOLAS.
  - Restrictions by Continental Shelf/Flag State.
  - MARPOL
- IADC (International Association of Drilling Contractors)
  - Incident Statistics Program (ISP)
- API
  - API Standards for Safe Offshore Operations.
  - Relevant Standard shall be applied.

Section B:
Safety Requirements

B1. Permit to work

EGPC

1.1. Scope

- The PTW applies to all Drilling rigs and Service Companies not using an approved Permit to Work (PTW) procedure.
- Drilling Contractors or Service Companies shall be permitted to use their own PTW procedure provided where:
  - The contractor PTW procedure shall be reviewed by the client's HSE and Drilling Departments and they have to ensure that it meets the minimum requirements of EGPC PTW procedure.
  - The contractor's PTW system shall cover the rig activities identified in their PTW process.

1.2. Purpose

The purpose of the Permit to Work Procedure (PTW) is to define a formal safe system of control for Rig or Rig less activities that are potentially hazardous. This procedure establishes minimum requirements and responsibilities for a Permit to Work, and outlines the competencies required for those responsible for implementing this procedure. When issued, the PTW serves as a written record of conditions and requirements agreed upon by the issuer and receiver. They list minimum safety precautions to be taken and hazards, which must be controlled.

1.3. Definitions

1.3.0.1. Person in charge (PIC) / Permit to work Issuer

The rig contractors PIC is the Tool pusher or, in his temporary absence, his designate. On Mobile Offshore Drilling Units (MODU), depending on the type of operations, the PIC is the Offshore Installation Manager (OIM)/Barge Master (or designate). Rigless Operations: The PIC shall be the Client on Site Representative.

1.3.0.2. Permit to work requester

The contractor persons who have received training (as mentioned in EGPC Administrative requirements /section1.9) and are certified by their employer to issue the PTW form and also who are performing the work shall request authorized PTW.

1.4. Responsibilities

1.4.1. Rig contractors and Service Companies

It shall be the responsibility of the rig contractor and Service Companies Line Management staff to fully implement their approved PTW procedure.

The rig operators Representative" must be notified by the rig contractor or Service Company of all permits before they are issued. He shall "initial" all permits besides the signature of the rig contractor "permit issuer" to acknowledge notification of the work.

1.4.2. Rig operators Representative

It is the responsibility of the rig operators on a contractor rig and Service Company to ensure that contractor personnel comply with their PTW procedure. He shall do this by reviewing the filed PTW forms at least once a month and periodically monitor work being conducted under the PTW.

Review the contractor PTW before work starts.

Determine if the mitigations and safety precautions specified for this work are adequate for safe operations.

Recommend additional mitigations if he determines that the safety precautions in EGPC HSE Guide Lines are not adequate.

Monitor jobs and shut jobs down where ALL of the steps in the JSAs/Risk Assessments are not being followed. This could result in the rig being put on downtime.

1.5. Function of PTW

The PTW is intended to be used on jobs that pose a risk to employees, the environment, company operations, or equipment. Drilling Operations may exempt jobs with extremely minimal risk from the PTW. Carpentry (without power tools), inspections in non-hazardous areas, cleaning or lubricating non-hydrocarbon equipment, and some classes of non-flash photography where Drilling or Rigless Operations believe these duties may be done safely without a PTW are examples of jobs that may be included

1.5.1. Examples of Work that may be performed without a PTW are:

- Routine drilling operations.
- Routine materials handling.
- Routine Helideck operations.
- Routine crane operations.
- Routine Cold Work inside workshops and within accommodation units.

In such cases and workover Operations must maintain adequate control in the workplace. On a practical level through applying PJSM using job specific JSAPTW shall:

- Limit the scope of the task.
- Ensure that upon completion of work, equipment and site are left in a safe condition.
- Ensure supervisors and crew members follow procedures, are informed of and heed necessary safety precautions and recognize the need for and use required safety equipment.
- Encourage pre-task planning, minimizing risk to personnel and equipment, and reduce the inconvenience and interference to other operations.
- Increase the awareness of personnel responsible for the overall safety of the unit by providing documented details of potentially hazardous activities in progress.
- Provide a continuous control and record of ongoing work activities, detailing the nature of the work, required precautions/safeguards, and the responsible competent person in charge.
- Provide formal notification of completion of all work to the PIC.

1.5.2. The PTW shall include, but is not limited to the following operations:

- Any Hot work involving welding, burning, heating, and any other spark producing activity or potential ignition source outside the designated "welding shop."
- Work requiring entry in any tank or confined space.
- Work where there is a danger of falling into the sea or any working over water activity.
- Work involving the use of unapproved electrical equipment (i.e., camera, flashguns, radios, cell telephones, etc.).
- Work on any pressurized system where there is a possibility of pressure being released.
- Work on electrical or mechanical equipment requiring energy isolation (LOTO) to ensure the safety of personnel.
- Work on electrical equipment in hazardous areas to eliminate sources of ignition.
- Work carried out below sea level (i.e., columns, pontoons, tanks, etc.) that might affect the station keeping, structural integrity, stability of the Rig or certification.
- Work that might affect or disable the Rig's safety systems (i.e., firefighting, gas detection, watertight doors, etc.).
- Man riding operations, this shall include the use of a man-ridding air hoist, work baskets whether suspended by a crane or air hoist.
- Personnel transfer to or from MODU to supply vessel.
- Work involving perforating or acidizing operations, radioactive materials, explosives or other dangerous substances.
- Work on/or near moving equipment where safety barriers and guards have to be bypassed.
- Work involving heavy lifts with material handling equipment (i.e., cranes, BOP hoists, slings, shakles, hook, etc.) that are near maximum safe working loads (85%).
- Opening the Master Dump Valve.
- Flaring and/or flow testing of wells.
- Maintenance of the draw-works, pumps, rotary table, top drive systems, engines, generators,

water treatment plant, life boat, all Derrick sections, deep water wells or tanks.

- Pressure testing BOPs.
- Cementing operations.
- Removing well heads.
- Installation and testing of all Contractor equipment.
- Any maintenance on the accumulator unit.
- Any raising or lowering of the mast.
- Slipping and cutting drill line.
- Any Rig up or Rig down by a Workover Rig over an existing wellhead
- Any repair to the jacking or ballasting system of an offshore rig (MODU).
- Any work to be performed or equipment to be moved near or around overhead power lines.

1.6. Procedure

1.6.1. Issuance and Approval of PTW form

Every Rig contractor and service firm must have appropriate procedures in place for the granting and approval of the permit to work to ensure that the PTW is issued correctly for the tasks that require it and that job-related hazards are controlled.

1.6.2. Filing of PTW

Each Rig contractor/ service company shall maintain a records for the issued PTWs and maintained at the Rig/Unit files for 3 months.

PTW shall be filed as one package in HSE filing with the below forms:

- Safe Job Analysis.
- Pre-Job Safety Meeting.
- All PTW checklists, Rescue plans.
- Lifting Plans.

A PTW log shall be maintained on work permit Focal Point (PTW board) and shall contain the following information, as a minimum:

- PTW number
- Date and time opened.
- Brief description of the task name.
- The workgroup of each PTW e.g. Drilling, Mechanical, Wire line team, etc.
- Date and time Closed.
- Isolation Certificate reference number, if applicable.

B2. LOCK-OUT & TAG-OUT (LOTO)

EGPC

2.1. Purpose

The purpose of this procedure is to protect personnel from the potential releases of stored energy or the startup of machinery or equipment that may cause injury. This specifically includes any maintenance activity where electrical, mechanical, steam, hydraulic, pneumatic or other energy source is present. Additional hazards may include heated, flammable, toxic, corrosive, or chemical material.

2.2. Scope

The rig contractors or service companies shall implement a Lock-Out/Tag-Out system in line, as minimum, with the instructions described in this section to ensure safe execution of Drilling and workover activities.

2.3. Responsibilities

It is the responsibility of the Person in Charge (PIC) to ensure compliance with this procedure.

2.4. Procedures

2.4.1. Job Supervisors

Shall identify all energy sources that are subject to this procedure. Prior to performing any maintenance or repair work on any machine or equipment, a drilling contractor or service company Permit to Work (PTW) shall be completed before the work is commenced.

2.4.2. Function Test

A function test shall be required following inspection and/or repairs to equipment which is in isolation and prior to reintroducing it into service, approval must first be granted by the PTW issuer. During the function test all safety practices and procedures in place are to be adhered to.

2.4.3. Restoring Service to Equipment

After completing the work the locks shall be removed and only the person who placed their lock and signed the tag may remove the lock.

The last person removing their lock and releasing the “DO NOT START” tag shall close out the permit and notify all affected parties that the repairs are complete and the equipment is ready for service.

The individual restoring energy shall:

- Inspect the work to ensure that non-essential items have been removed.
- Ensure that the equipment components are intact.
- Check the work area to ensure all employees are safely positioned or removed from the equipment.
- Notify all affected employees.

In the event a person is unavailable to remove the lock, the following procedure shall be followed:

- Verify that the employee is not on-tour.
- Advise PIC and gain approval to remove absent employee’s lock.
- Ensure that the employee knows that their lock/tag has been removed before they return to work.

2.4.4. Locks and Tags

- Each unit shall provide standardized tags and individually keyed locks as required to implement the procedures.
- The keyed locks and tags shall be of a specific design used only for LOTO.
- Tags shall be on a non-reusable type.
- During isolations, keys to all locks used in the LOTO process shall be kept in a lock box under

the control of the PIC and shall not be kept on individual's person.

2.4.5. Long term isolation procedure

In the event it is necessary to isolate a piece of equipment for an extended period of time or more than one tour, the following procedure shall be followed:

- A permit shall be raised; a record of the isolation shall be made in the Isolation Log added on the Active Isolation List displayed in the control room/permit issuing office.
- The equipment shall be isolated, locked and tagged out. When isolation of the equipment has been completed (i.e., removal of equipment) the electrical PTW and all safeguards shall remain in place

When work/repairs have been completed on the isolated equipment, the following steps shall be followed:

- All LOTO equipment shall be removed following all safety procedures.
- Once the equipment is back in service and all systems have been returned to a safe condition, the PTW shall then be cancelled. Signed off

2.4.6. Training

Employees are required to perform LOTO procedures shall receive training in these procedures before performing the procedures. This training shall be documented.

2.4.7. Audit

LOTO system shall be audited by drilling contractor or Service Company to evaluate its implementation and potential improvement opportunities. Records of these audits are to be available for revision.

B3. HSE Drills

3.1. Scope

An emergency drill is a procedure carried out to practice how an individual/ groups would respond to an unexpected event to a simulated crisis such as fire, H2S release, kick etc.

3.2. Purpose

The purpose of this procedure is to describe the requirements to ensure all personnel onboard are adequately qualified and trained regarding safety at all organization units and that drills and exercises are carried out to:

- Tests and develops the communication arrangements.
- Tests emergency equipment under realistic conditions.
- Maintains and develops individual competencies in emergency response, including command and control activities.
- Monitors the performance of individuals to identify areas of improvement and any additional training requirements.
- Verifies data and assumptions used in the emergency response assessments, E.g. times to evacuate / escape and muster etc.

3.3. Responsibilities

3.3.1. Person in Charge (PIC)

Operator's or Contractor's PIC is responsible / lead the team on EOC (Emergency Operating Center) and insuring that drills are conducted in safe and professional manner and deficiencies must be observed, documented and monitored to prevent the reoccurrence in any real emergency case.

Note:

- The authority shall be delegated to Night Pusher to perform the drills during the night shift.
- In the absence / incapacitated of the Person in Charge (PIC) the STP shall replace him.

3.3.2. Barge Engineer (BE)

Is the On Scene Commander, the Damage Control Leader, Fire Marshal for leads Fire Fighting and communicate and report the situation to EOC (Emergency Operating Center)

3.3.3. Other Personnel responsibilities:

- Developing and implementing a drill and exercise program, based on the reliable scenarios identified below, will ensure that all procedures of the
- Emergency response plan are practiced and tested for realistic potential incidents, including the command and control activities.
- All Personnel shall participate in every drill; responsibilities of all personnel will be mentioned below on every drill procedure.

3.3.4. HSE Engineer shall be responsible for

- Keep a record for all drills on his files.
- Follow up with STP to ensure that all require drills are performed within due date.
- Report all the drills Area of improvements in the drills tracking sheet and work with all rig supervisor to improve all the weak areas.

3.3.5. Teams:

3.3.5.1. Firefighting team:

To move and control to a fire as quickly as possible. Normally it will be 2 teams on board, Fire team No. 1 and fire Team No. 2 by the rig crew as per station bill.

3.3.5.2. Gas check and Search / Rescue Team:

To search for any man down due to the emergency case and transport the victim to the Safest place to medical team to start patient treatment.

3.3.5.3. Medical Team:

Lead by the rig Doctor / Medic. Mustered as per Station Bill to make treatment for injured Persons.

3.4. Drill Procedures

The onshore/offshore drills procedures describe the typical types of emergencies on organization sites, its frequency, identified alarm for each drill, actions taken and explain the emergency response knowledge required for all personnel to ensure that they are prepared for an emergency in terms of escaping, evacuating and rescue from a particular worksite or location.

- Drill is designed to meet a specific training purpose or (e.g. breathing apparatus, procedures for the fire team members) then it should include mustering of all personnel to both their primary and their secondary muster points.
- Some drill didn't require mustering of all Employees, it required other procedures to be done (e.g. accumulator drill, oil spill drill) and it will be discussed later. However, some drill doesn't require mustering of all employees such as fire pump test drill, stop work authority.
- At a minimum, the frequency of each drill should be held and documented according to organization requirements or if needed as per practice.
- Station bill shall be prepared, approved and posted by each rig contractors.

3.4.1. Well control drills

Shutting-in the well quickly to minimize the size of the influx is a major element of successful well control.

3.4.2. Pit drill

- The pit drill is designed to simulate an actual kick while drilling ahead and is designed as both a teaching and testing tool, and also to make driller to constantly aware of the fluid level in the mud pits.
- Pit drills should be supervised by the STP.
- All equipment required for pit drills is to be available on rig floor and inspected by driller in each shift prior to drilling and kept in good operating condition.
- Alarm Identity: Continuous sounding of air horn.
- Results of the pit drill shall be documented in the Kick / pit drill form

3.4.2.1. Procedure:

- The STP simulates the kick by raising a float in the mud pits or by raising the arm on the flow show indicator and making a note of the time.
- Detect the kick and sound alarm.
- The time of the alarm must be noted.
- Upon hearing the alarm, all members of the drilling crew should immediately execute their assigned duties, identified below.
- The Driller prepares to shut in the well using the approved organization Shut-in Procedure.

Kick / Pit Drill Responsibilities	
Position	**Responsibility**
STP / NTP	Proceed to Rig Floor and assess situation.
Driller	Sound air horn continuously until well is shut in as per organization Procedure.
Assistant Driller	Assist the Driller in shutting in the well and confirming that it is shut in.
Derrick man	Proceed to Suction Tank vicinity and prepare to raise mud weight.

Kick / Pit Drill Responsibilities	
Position	**Responsibility**
Floor man	Remain on Rig Floor and assist the Driller as directed.
Roustabout Foreman	Mobilize Assistant Floor men, Crane and Forklift Operators to mud mixing area.
Assistant Floor man	Proceed to mud mixing area to assist the derrick man
Rig Doctor	Proceed to Master Point and a wait instruction.
Welder	Proceed to Master Point
Senior or Night Electrician	Proceed to SCR/VFD House and a wait instruction.
Senior, Night Mechanic	Proceed to mechanics workshop and wait instruction.
DSV	Receive status report and co-ordinate well kill.
HSE Engineer	Shall assist in observing the crew and recording completion times.
All other Personnel	Proceed to Master Point

3.4.3. Kick drill

- The kick drill is designed to train the drilling crew to recognize and respond to kick indications which occur while tripping pipe.
- All equipment required for kick drills is to be available on rig floor and inspected by driller in each shift prior to drilling and kept in good operating condition.
- Results of the trip / kick drill shall be documented in the Kick / pit drill form
- Responsibilities: Same as above Pit drill

3.4.4. Accumulator Drill

- Accumulator drills / BOP tests are designed to verify that the accumulator/closing system is in good working order and that it is properly sized for the particular blowout preventer stack.
- Accumulator drills must be conducted when the drill pipe is not in open hole, but up in the casing.
- Results of the accumulator drill shall be documented in the accumulator drill form

3.4.4.1. Procedure

- Turn off all accumulator-pressurizing pumps.
- Record the initial accumulator, manifold, and annular pressures.
- Close all of the preventers (Except the Blind Rams). Substitute a reopening of a pipe ram to simulate the blind ram closure when applicable.
- Open the Hydraulic Control Relief (HCR) valve.
- Measure and record the closing times for each preventer with a stopwatch.
- Record the final accumulator, manifold and annular pressures.
- To pass the accumulator test, all BOPs must have closed in less than 30 seconds with at least: 1500 psi accumulator pressure remaining (for a 3000 psi accumulator).
- Observe the remaining pressure for at least 5 minutes to detect any possible ram piston seal leaks.
- Re-open the BOP and turn the accumulator pump(s) back on.
- Record the time required to charge system back up (recharge time).

Accumulator Drill Responsibilities	
Position	**Responsibility**
Senior or Night Tool Pusher	Proceed to Rig Floor and assess situation.
Driller	Shut in as per applicable Client Procedure.
Assistant Driller	Assist the Driller in shutting in the well and confirming that it is shut in.
Derrick man	Proceed to Suction Tank vicinity and prepare to raise mud weight.
HSE Engineer	Shall assist in observing the crew and recording completion times.
All other Personnel	Work as scheduled

3.4.5. Mustering and Rescue Drills

- Every rig shall provide means of escape and evacuation in a safe manner; two muster points are required.
- Some of the below drills required mustering and evacuation, other required rescue only, and others required both.
- All drills have to be performed in a professional way to train employees to be aware of the onshore/offshore layout, associated emergency procedures, escape routes, muster locations, alarms locations, usage, , and appropriate response to it, and methods of communication.
- These drills are maintained to ensure effective control and treatment of injured personnel as required.
- Personnel should receive training relevant to their duties.
- Rescue drills require the use of a dummy in the same size and weight of a real person.
- A rescue team is required to be identified for any rescue drill procedure and they have to be well trained for all emergency scenarios.

3.4.6. H2S Drill

- Organization is committed to providing adequate arrangements, resources, and training to facilitate the safe evacuation and escape of personnel in the event of H2S emergency drill. Thus a secure muster area is provided where all personnel can access.
- Every person who may be required to work on a rig must be able to wear breathing apparatus within 45 seconds.
- All known persons working near a rig must be able to recognize the H2S alarm and know to proceed to the Master Point.
- Results, corrective actions, areas of strengths, and response time of the H2S drill shall be recorded in the H2S drill form

3.4.6.1. Procedure

- Masking up and breathing bottled air for those crew members whose assigned tasks require breathing apparatus.
- Requiring all non-essential personnel (i.e that have no specific assigned tasks as per the Station Bill) to musters at upwind Master Point.
- Conducting a head count by using T-Card system for all personnel on board for fast and efficient head count and search for any missing personnel. All personnel shall flip their T-Cards on the T-Card Board.
- Alarm Identity: Continuous audible alarm and strobe light.
- The Fixed Gas Detection System Panels will indicate which of the four sensors is in alarm condition.

H2S Drill Responsibility	
Position	**Responsibility**
Senior or Night Tool pusher	Proceed to Master Point and don SCBA with selected buddy. Confirm that well is shut in. Determine source of H2S with useof portable gas detector. Report status to DSV.
Driller	Don SCBA on. Activate air horn. Shut in well and await instruction.
Assistant Driller	Proceed to Master Point , then Proceed to gas release location with (30 Min. SCBA) then report gas readings to PIC
Derrick man	Proceed to Master Point. If on Monkey board, wear Escape Hood then proceed to Master Point.
Floor man	If on Rig Floor, don SCBA, and assist Driller. If at Shale Shakers, don SCBA and proceed to Master Point.
Roustabout Foreman	Proceed to Master Point. Don SCBA and await instruction to search.
Assistant Floor man	Proceed to Master Point. Two Assistant Floor men don SCBA and await instruction.
Rig medic	Proceed to Master Point with Muster Board, Oxygen Resuscitator and Medical First Response Kit. Send Runner to alert Main Camp personnel. Proceed to Muster.
Welder	Isolate Welding Machine and Oxy/Acy sets.
Radio operator	T-Card Head counting If R.O is not available, Material man shall be assigned for this task, but for a work over rigs derrick man is assigned
HSE Engineer	Go to Master Point. Monitoring crew performance and areas of improvement.
Senior or Night Electrician	Proceed to SCR / VFD House and stand ready to electrical isolate the power for any required equipment
Senior, Night or Assistant Mechanic	Proceed to Engine room and stand ready to mechanical isolate any required equipment/lines
Rig Driver	Turn off vehicle engine and proceed to Master Point. Await instructions.
DSV	Proceed to Master Point and receive status reports. Respond as per company policy.
All Other Personnel	Proceed to Master Point

3.4.7. H2S Rescue Drill

- It is a drill that are done to measure the response of the rescue team and the medic in a man down or missing scenario.
- Rescue Team members should be trained and physically fit to be able to carry out rescue operations while donning SCBA. Training should include classroom training, on-the-job training in rescue techniques, and an examination.
- There must be no prior warning of this drill, nor any warning whatsoever that someone is missing. It is critically important to verify that the standard H2S drill procedure is adequate to identify who is missing and locate and rescue him.
- Results, corrective actions, areas of strengths, and response time of the H2S drill shall be documented in the H2S drill form

3.4.7.1. Procedure

Follow the above normal H2S drill procedure with addition to:

- HSE Engineer / STP shall assign a person to be a man down in a specific place
- No other one knows that there is a man down or missing

Rig crew must be able to identify that someone is missing by using T-Card system for all personnel on board for fast and efficient head count. All personnel shall flip their T-Cards on the T-Card Board, locate the missing person, and rescue him by bringing him to the Master Point and administering appropriate first aid.

Alarm Identity: Continuous audible alarm and Strobe light. The Fixed Gas Detection System Panels will indicate which of the four sensors is in alarm condition. There must be No prior warning of the drill

Note: The Rig Public announcement (PA) system shall immediately and repeatedly announce "This is a Drill__ This is a Drill"

H_2S Rescue Drill	
Position	**Responsibility**
Senior or Night Tool pusher	Proceed to Master Point and don SCBA with selected buddy. Confirm that well is shut in. Determine source of H_2S with use of portable gas detector. Report status to DSV.
Driller	Don SCBA. Activate air horn. Shut in well and await instruction.
Assistant Driller	Proceed to Master Point , then Proceed to gas release location with 30 Min. SCBA then report gas readings to PIC
Derrick man	Proceed to Master Point. If on Monkey board don Escape Hood then proceed to Master Point.
Floorman	If on, Rig Floor don SCBA and assist Driller. If at Shale Shakers don SCBA and proceed to Master Point then they will be secondary rescue team
Roustabout Foreman	Rescue team leader Proceed to Master Point. Don SCBA and await instruction to search.
Assistant Floorman	Proceed to Master Point. Rescue team
Medic	Proceed to Master Point with Muster Board, Oxygen Resuscitator and Medical First Response Kit. Send Runner to alert Main Camp personnel. Take Muster.
Welder	Isolate Welding Machine and Oxy / Acy sets.
Radio operator	T-Card Head counting If R.O is not available, Material man shall be assigned for this task, but for a work over rigs derrick man is assigned
HSE Engineer	Go to Master Point. Monitoring crew performance and areas of improvement
Senior or Night Electrician	Proceed to SCR / VFD House and stand ready to electrical isolate the power for any required equipment
Senior, Night or Assistant Mechanic	Proceed to Engine room and stand ready to mechanical isolate any required equipment/lines
Rig Driver	Turn off vehicle engine and proceed to Master Point. Await instructions.
DSV	Proceed to Master Point and receive status reports. Respond as per Clint policy.

H_2S Rescue Drill	
Position	**Responsibility**
All other personnel	Turn off engines and proceed to Master Point.

3.4.8. Firefighting

Fire drill may be done in the main camp or in the rig site that aims:

- To provide an orderly emergency response plan for all employees.
- To ensure all exit routes, emergency staircases are not obstructed and can be used in an orderly fashion during emergencies.
- To ensure fast, organized and smooth evacuation during emergencies.
- To train rescue team on the fire drill, emergency evacuation and to conduct their duties successfully.
- To test the working conditions and effectiveness of all fire and emergency equipment.
- Results of the firefighting drill including location, type of drill, time to assemble and fire fight; shall be documented in the firefighting drill form

3.4.8.1. Procedure

- Sound the fire alarm and shout fire, fire and fire
- Actions to execute when fire is seen and where.
- Starting of a fire pump, using required jets of water to show that the system is in proper working order.
- Inspection of fireman's outfit and other personal rescue equipment, for correct use and donning.
- The HSE Engineer shall observe and time drill crew response.
- Fire drill locations shall be varied to provide practice in all Fire Attack Plans.
- Conducting a head count for all personnel by using T-Card system for all personnel on board for fast and efficient head count and search for any missing personnel. All personnel shall flip their T-Cards on the T-Card Board.
- Alarm Identity: Sounding of intermittent tone and followed by an announcement in the PA clarifying the location of the fire.

Fire Drill Responsibilities	
Position	**Responsibility**
Senior or Night Tool Pusher	Proceed to fire team muster point and Direct firefighting operation.
Driller	Make PA announcements as to the fire location. Prepare to shut in the well.
Assistant Driller	Fire Team Leader. Proceed to Fire Team Muster Point
Derrick man	Proceed to Master Point.
Floor man	Proceed to fire team muster point and One Floor man to remain on Rig Floor to assist Driller.
Roustabout Foreman	Back-up Fire Team Leader. Proceed to Fire Team Muster Point
Assistant Floorman	Proceed to fire team muster point
Rig Doctor	Proceed to Master Point with Muster Board, Oxygen Resuscitator and Medical First Response Kit. Take Muster.
Welder	Isolate Welding Machine and Oxy / Acy sets.
Radio operator	T-Card Head counting If R.O is not available, Material man shall be assigned for this task, but for a work over rigs, a derrick man is assigned

Fire Drill Responsibilities	
Position	**Responsibility**
HSE Engineer	Go to Master Point. Monitoring crew performance and areas of improvement.
Senior or Night Electrician	Proceed to SCR / VFD House and stand ready to make electrical isolations.
Senior, Night or Assistant Mechanic	Proceed to and start diesel driven water pump. Remain in vicinity.
Ambulance driver	Drive the ambulance if available and Proceed to Master Point.
Client DSV	Proceed to Master Point and receive status reports. Respond as per Client Company policy.
All other Personnel	Proceed to Master Point.

3.4.9. Secondary Drill (disaster drill)

- Every rig shall conduct an annual emergency disaster drill, to be ready for any unexpected events that may happens in work location.
- Disaster drill may be a combination from different scenarios (e.g. Well control situation, gas release and man down) as such situations will be reported and evaluated by rig Supt and HSE Rig supporter and shall require minimal mobilization of equipment and personnel.
- It aims to identify any recurring areas of emergency operations preparedness weaknesses in secondary drills, the adequacy, effectiveness, and ensure continuous emergency response preparedness training initiatives.
- Results, corrective actions and areas of strengths of the secondary drill shall be documented on secondary drill form

3.4.9.1. Procedure

- A secondary drill required the participation of all employees depending on the type of emergencies.
- It has no typical procedures, but depends on the emergency scenarios chosen to perform the drill.
- STP will use the Thuraya phone (If available) after recognizing the situation to call the rig superintendent to let him assess the situation.
- Alarm Identity: Depends on the scenarios
- Responsibilities will be determined as per the scenario approved by rig Superintendent and HSE Rig Supporter.

3.4.10. Man down (Injury) Drill

- Each rig shall conduct a medical drill that complies and introduce the medical emergency treatment in different scenarios.
- Every rig shall address and post the numbers of the nearest medical facility and nearest Client medical clinic.
- The drill shall be combined with any of the rescue drills such as H2S man down drill and first aid, confined space rescue drill.

3.4.10.1. Procedure

- Drill comes after a scenario of a rescue drill so conducted a normal situation in addition to the first aid drill procedures which is:
  - Immobilizing a casualty.
  - Using the correct techniques when maneuvering a casualty in to a stretcher.
  - Identifying the appropriate type of stretcher to use.
  - Basic First Aid.
  - CPR.

- If needed transferred to the ambulance to the nearest hospital.
- Alarm Identity: Depends on the scenario and fast announcement
- Responsibilities will be determined as per the scenario of the rescue drill.
- Results of the drill, its location, type of drill, type of injury and time to bring injured person to the clinic shall be documented in the Man down (injury) form

3.4.11. Man Lost Search / Rescue Drill

- Each rig shall conduct a man lost drill. It usually done by: the pickup driver lost in desert scenario to identify, assess the risk and the consequences of the real situation if it happened and check the quality and the effective of the GPS system and the Thuraya phone (If available) assuming no mobile signal.
- Results, corrective actions and areas of strengths of the man lost drill shall be documented in the man lost drill form

3.4.11.1. Procedure

- The scenario of the man lost should be done by STP and HSE Engineer approved by the rig SUPT and HSE Rig Supporter and could be as minimum:
  - Driver lost his way and missing and there is no contact.
  - PIC reviewed JMS and called organization Office to inform the situation and then Primary Response Plan (PRP) is activated
  - Started to contact the driver (Failed due to weak mobile signal) then, tried to contact his family / friends who may know the driver (No Body have an idea) and finally tried to Contact nearest hospitals and police stations (His name is not listed)
  - Secondary Response Plan is activated and DSV notified about missing person in the desert, a meeting is conducted to plan the search route of the grounding search included the black road and off road searches and Thuraya phone is provided to the selected search team.
- Ground search Plan started with a planned route.
- Alarm Identity: No alarm required
- Responsibilities will be determined as per the approved scenario.

3.4.12. Vertical Rescue Drill

- Each rig shall conduct a vertical rescue drill (using dummy) to prevent the injuries that could happened during the mobilization of an injured person while working at height.
- A vertical rescue drill scenario could differ according the place of injury; a vertical rescue kit (working on height rescue kit) could be used while:
  - Using man riding
  - Using man basket
  - Working over roofs
- Results, corrective actions and areas of strengths of the vertical rescue drill including location, type of drill, time to transfer injured person to clinic shall be documented in the vertical rescue drill form

3.4.12.1. Procedure

- The scenario of the vertical rescue drill should be done by STP and HSE Engineer approved by the rig Superintendent and HSE rig supporter and could be as minimum:
  - The usage of the dummy is Must.
  - Prompt notification of the Medic.
  - First aid at the injury site if possible.
  - Placing and securing the injured person in a basket stretcher (appropriate rescue equipment).
  - Transferring the injured person from height to the rig clinic (during all drills, a suitably weighted dummy must be used).
- Alarm Identity: No alarm required only fast announcement on PA system
- Responsibilities will be determined as per the approved scenario.

3.4.13. Confined Space Rescue Drill

- Each rig shall conduct a confined space rescue drill to prevent the injuries that could happen

during the mobilization of an injured or unconscious person working inside a confined space, it also ensures the effectiveness of the usage of the confined space rescue kit.
- Rescue Team members should be trained and physically fit to be able to carry out rescue operations while don a SCBA. Training should include classroom training, on-the-job training in rescue techniques, and an examination.
- Results, corrective actions and areas of strengths of the confined space rescue drill including location, type of drill, rescue equipment used and time to transfer injured person to clinic shall be documented in the confined space rescue drill form

3.4.13.1. Procedure

- The scenario of the Confined Space Rescue Drill should be done by STP and HSE Engineer approved by the rig Superintendent and HSE Section Head and could be as minimum:
  - The usage of the dummy is Mast
  - Confined space rescue kit has to be available and in good condition and used to mobilize IP to ground level.
  - Prompt notification of the Medic.
  - First aid at the injury site if possible.
  - Placing and securing the injured person in a basket stretcher (appropriate rescue equipment).
  - Transferring the injured person from height to the rig clinic (during all drills, a suitably weighted dummy must be used).
- A PTW shall be done before conducting drill to ensure that all controls in place while entering a confined space.
- The drill shall be conducted by confined space entry rescue team, confined space rescue equipment (Tripod & winch, Elsa escape, Harness W/shoulders D-ring and Y-lanyard).
- Alarm Identity: No alarm required only fast announcement on PA system
- Responsibilities will be determined as per the approved scenario.

3.4.14. Environmental Protection Drills

- Environmental drill has to be done to ensure that every rig has the appropriate spill prevention and cleanness equipment and effective to be used without causing any harm to personal or environment.
- The rig has to work to prevent incidents that may result in spills of hazardous substances.
- This means making sure that the facilities are well designed, safely operated, and properly inspected and maintained. It also involves an effective spill emergency response capability.
- Organization plan, prepare and practice on emergency response to incidents to mitigate the consequences to people and the environment.

3.4.15. Oil Spill / Clean up Drill

- Conducting an oil spill drill will help to achieve continuous performance improvement. And manage health, safety, environment and social performance in a systematic way, it also train persons to conduct a safe clean plan to any spill happened that could harm personnel or environment.
- Results, corrective actions and areas of strengths of the Oil spill drill shall be documented in the Oil spill drill form

3.4.15.1. Procedure

- The scenario of the Oil spill drill should be done by STP and HSE Engineer approved by the rig SUPT and HSE Rig supporter and could be as minimum:

  - Observation of the incident or spill scene.
  - PIC should perform a safe cleanliness plan.
  - Use and demonstration of all rig clean-up equipment that shall be located in designated areas.
  - The equipment used during drills shall immediately be brought back to its fully operational condition and any faults and defects discovered during the drills shall be remedied as soon as possible.

- Alarm Identity: No alarm required only fast announcement on PA system.
- Responsibilities will be determined and mentioned as per the approved scenario.

3.4.16. Emergency Equipment Maintenance Drills

Emergency maintenance drills has to be conducted to show and test the effectiveness and the operation of the emergency equipment used in the emergency cases such as checking of the fire pump.

3.4.17. Weekly Fire Pump Test

- Each rig shall conduct a fire pump test drill to ensure the effectiveness of the fire pump and insure that maintenance procedures are quietly done in appropriate manner.
- Results, corrective actions and areas of strengths of the fire pump drill shall be documented in the fire pump drill form

3.4.17.1. Procedure

- Rig Electrician and mechanic to confirm and inspect their checkpoints as per the fire pumps checklist
- Operate the pump to document the max pressure.
- The usage of at least one fire hose while operating the pump and the checking of any water leaks in lines or hoses.
- The presence of the rig HSE Engineer while the drill is required to ensure that all steps has been done safely and appropriate.
- Alarm Identity: No alarm required.
- Responsibilities: As per mentioned in the procedures and the fire pump drill form

3.4.18. Stop Work Authority drill

- STOP work authority (SWA) drills shall be conducted to Measure the level of employee's awareness and test its effectiveness to enhance the reporting and encourage STOP work authority.
- Each individual has the right to stop work at any time if you see or witness something you feel unsafe or just doesn't feel right and also shall participate in Stop work authority drill.
- All Employees are committed to use the Stop work authority as it is a very important and a proactive tool to avoid accidents and correct unsafe acts and conditions before facing incidents.
- Alarm Identity: No alarm required.
- Weekly STOP work Authority (SWA) Drill

STW Responsibilities:	
HSE Engineer	Coordinate the drill scenario to achieve the direct benefit of the drill and discuss it with crew members while safety meetings.
STP	Give any required support to complete the drill properly.

Note: All workplace employees will be determined as per the scenario of the SWA drill.

3.4.19. Emergency Drills for Offshore

The procedure of each drill depends on the type of the drill as following:

- Abandon rig drill
- Life boat drill
- Man-overboard drill
- Security drill
- Helicopter emergency drill

3.4.20. Abandon Rig Drill

- This exercise will be conducted weekly by rig crew and supervised by the OIM / Barge Engineer.
- Abandon drill shall be realistic and practical as possible with the use and demonstration of all rig lifesaving equipment including:
  - Reporting to stations and preparing for the duties described in the station bill.
  - Checking that crew are suitably dressed.
  - Checking that lifejackets are correctly donned.
  - Lowering of at least one lifeboat after any necessary preparation for launching.
  - Different lifeboats shall, as far as practicable, be lowered in compliance with this requirement at successive drills.
- Summoning of crew to muster stations with the alarm followed by drill announcement on the public address or other communication system and ensuring that they are made aware of the order to abandon the rig.
- Each lifeboat shall be launched and maneuvered in the water at least once every three months during an abandon ship drill.
  - Starting and operating the lifeboat engine.
  - Operation of davits used for launching life rafts.
  - Search and rescue of passengers trapped in their staterooms.
- The OIM will decide if more frequent abandon ship drills are required to ensure adequate response.
- Abandon ship Drills must include everyone on board, with the possible exception of only those crew members absolutely essential to maintain a safe watch over the on-going operation.
- Abandon ship drills may be combined with fire and / or H2S drills.
- The maximum acceptable response time for abandon ship drills must take into account:
  - The possibility that evacuation may have to proceed in a hazardous H2S environment.
  - Therefore, everyone on board must be able to muster to the boat stations and enter it with enough time left to lower the boats and sail to a safe upwind area before the SCBA's run out of air.
  - Everyone on board must be with their assigned boat within 12 minutes of the alarm first sounding.
- Fully occupied lifeboats shall not be lowered into the water as part of the abandon ship drill. When performing drills with personnel on the lifeboat, the lifeboat must first be:
  - Lowered and recovered without persons on board to ensure all equipment is functioning correctly.
  - The next launching should only be with the number of personnel on board necessary to operate the boat.
  - FRC crew contacted to ensure landing area is kept clear with life boat crew.
  - Coxswain (The person in charge of a boat) entered lifeboat, started engine, activated sprinklers system

3.4.20.1. Procedures:

- Emergency Operating center (EOC) manned by senior rig management.
- Immediate and repeated PA announcement " This a Drill__ This is a Drill"
- A trained and competent muster checker shall be assigned on each lifeboat.
- Headcount procedure for verification / reporting (to the EOC), that all persons are accounted for Search and rescue procedure to locate all missing persons.
- Maximum acceptable response time for all persons to report to their boat / Raft stations.
- Verification that everyone aboard the rig is capable of entering the lifeboat and securely fastened his seat belt while wearing both a PFD and SCBA.
- Instruction in the use of radio life-saving appliances.
- Alarm Identity: According to Station Bill.
- For Abandon Rig Drill

3.4.21. Life Boat Drill

Life boats shall be launched with their assigned crew aboard and maneuvered in the water.

3.4.22. Man-Overboard Drills

- Each offshore rig shall develop Man-Overboard rescue procedures and train a sufficient number of crewmen for safe and prompt rescue.
- This drill is conducted at least once per 12 weeks. OIM will decide if more frequent man overboard drills are required to ensure adequate response.

3.4.22.1. Procedure

- A suitably floatable dummy shall be used to simulate a man overboard. Man overboard drills shall involve either (or both) the standby boat, when available on that specific rig.
- If no standby boat is readily available, the rig must launch a rescue boat to retrieve the dummy.
- Each man-overboard drill including the response time to rescue the man overboard shall be documented
- Alarm Identity: No alarm required only fast announcement on PA system.

Responsibilities	
MOB (Man over Board)	**Leader is Barge engineer.**
Station Bill	Shall assign the team members, they are responsible for Launching Fast Rescue Boat Don lifesaving equipment for rescue the MOB person.
First Aid team	Shall wait for the casualty with stretcher & first aid kit.

3.4.23. Security Drill

- The objective of this drill is to ensure that shipboard personnel are proficient in all assigned security duties at all security levels and the identification of any security related deficiencies which need to be addressed.
- Security drills will be implemented to ensure the effective implementation of the provisions of the ship security measures.

3.4.24. Helicopter emergency drill

- Helicopter emergency drill shall be done once every month in helicopter emergency drill form
- Foam system shall be operate during this drill.

3.5. Communication

- HSE Engineer shall ensure that all drills observations and corrective actions are communicated to all employees who are affected by the drill during the drill done after finishing the drill.
- All the observations and corrective actions must be tracked in the drills tracking sheet and to be filed in the drills file.
- A follow up on the corrective action must be done by the Rig HSE Engineer during the drill after finding the observation.
- A drill tracking sheet shall be developed monthly and updated weekly that include all drills performed during the month, the due date for the next drills to avoid any incompliance.
- this drill tracking sheet shall be sent to the organization office monthly to track and informed about the next drills which needs to be pre-planned to develop a good scenario.

3.6. Drills Matrix

	Drills / Intervals	Weekly	Bi-Weekly	Monthly	3 Months	6 Months	12 Months
Onshore / Offshore Drills	Kick Drill / Pit drill						
	Accumulator Drill / BOP Drill						
	Fire Drill - Rig Site						
	Fire Drill - Camp Site						
	Man down (Injury) Drill						
	Vertical Rescue Drill						
	Man Over Board Drill and Rescue Boat						
	Confined space rescue drill						
	H2S Release Emergency Drill						
	H2S Rescue Drill						
	Annual Emergency Drill Disaster						
	Oil Spill Drill						
	Fire Pump Drill						
	Stop work Authority drill						
For Offshore Drills only	Helicopter Emergency						
	Life boat drill						
	Security Drill						
	Abandon Rig Drill						
	Life Boat Drill						
	Fire Drill						

B4. DROPS prevention program

EGPC

4.1. Scope

Providing guidelines to all personnel of rig contractors and service companies to prevent dropped objects.

Assist with the reduction and elimination of potential dropped objects through:

- Standard approach to DROPS surveys and inspections
- Commitment to training.

4.2. Purpose

To convey EGPC's expectations regarding the prevention of injury to personnel and damage to equipment from potential dropped objects.

4.3. Definitions

4.3.1. DROPS

Dropped Objects Prevention Scheme.

4.3.2. DROPS Inspection

Inspection performed by rig crews using DROPS Inspection Books.

4.3.3. Fail List / Corrective Action List

A list of remedial actions resulting from the conditional assessment of the Dropped Objects Survey.

4.3.4. Independent Dropped Objects Survey

A conditional assessment and equipment survey by a 3rd Party resulting in the makeup of the Dropped Objects Survey, Dropped Objects Inspection Book and a Fail list /Corrective action list.

4.3.5. Inspection Book

A picture book containing all necessary information for the rig crews to use to perform rig based Dropped Objects Inspections.

4.3.6. Inspection Procedure

Description of how rig crews perform a Dropped Objects Inspections.

4.3.7. Mitigation of Dropped Objects

Reduce the consequences of an incident if preventive measures fail.

4.3.8. Prevention of Dropped Objects

Prevent an item from dropping by reducing the likelihood of the event.

4.3.9. Primary retention

The primary means of securing equipment at height is by reducing the likelihood of it dropping, e.g., nuts, bolts, screws, clamps, brackets, turnbuckles or welding.

4.3.10. Retention Methodology

A systematic approach to retaining equipment at height (see Primary/Secondary).

4.3.11. Secondary retention

Refers to the mitigating measure put in place to reduce the consequence should the primary retention fail

4.3.12. Static Dropped Object

A solid object, initially at rest, that falls from its original position under its own weight.

4.3.13. Dynamic Dropped Object

A solid object that breaks free from its fastenings due to the applied force from the impact of some other or a moving object.

4.4. Responsibilities

It is the responsibility of the Ri contractors/ operators Person in Charge (PIC)/business unit to ensure compliance with this program.

4.5. General requirements

4.5.1. All rig contractors and service companies must have DROPS program that:

- Follows Industry best practices, referencing dropsonline.org and reliably securing the last version.
- Communicates dropped objects expectations and requirements to all parties concerned.
- Can verify compliance and effectiveness through the audit process.

4.5.2. Each installation with a DROPS program shall have the following :

- An annual Independent 3rd party dropped objects survey as per industry-recommended guidelines from the approved vendors' list.
- Defined DROPS survey and inspection criteria.
- Perform periodic DROPS inspections on the rig by the rig crew.

4.5.3. An effective tracking system:

Implemented by the rig contractor to be used to schedule, track, and monitor:

- All 3rd Party DROPS surveys and inventory lists.
- All periodic DROPS inspections performed by rig crews.
- All corrective action or fail lists (all lists to be closed out and documented, including photos as evidence).

4.5.4. Equipment Inventory

An inventory of all equipment at height must be in place. If the rig does not possess an Inventory, the process can be done by onboard personnel or retrieved from their 3rd party DROPS survey.

- Each zone will have an inventory of equipment and shall be recordable.
- The rig supervisors will analyze any equipment that is added or removed for any potential knock-on effects.
- The inventory must be updated and any equipment should be added or removed.

4.5.5. Secondary Retention

All secondary retention systems shall be OEM-compliant and/or certified designs installed following the applicable OEM design and installation standards.

4.5.6. Worksite Hazard Management

Each rig is responsible for the implementation of its Safety Management System. This should include but is not limited to the following:

- An adequate working at height policy and procedure.
- A working at heights or derrick log book accountable to the area PIC.
- DROPS toolbox/toolkits.
- Address Dropped Object Management using Safety Management Tools:
  - JSA/PTW.
  - Pre-Tour Meetings/Toolbox Talk.

- STOP WORK AUTHORITY.
- Management of Change process.
- Behavioral Based Safety program.
- DROPS Cargo and Collision Checklists (Appendix No.5).
- DROPS Calculator (Appendix No.3).
- DROPS Inspection Books.
- Zone Management (i.e., Red or No Go Zones shall be clearly identified)

4.6. DROPS Survey and Inspection Criteria

The following guidelines are to ensure all DROPS surveys and inspections are performed consistently. Areas

Identify and divide the Derrick and rig into small manageable zones to assist with the inspection process. The number of zones shall depend on the size and type of rig.

4.6.1. Example of land rig:

- Zone1: Crown Area.
- Zone 2: Upper Derrick to Monkey Board.
- Zone 3: Travelling Equipment + TD Rails.
- Zone 4: Under Monkey Board to Rig Floor.
- Zone 5: Lower Substructure and BOP area.
- Zone 6: All other Areas:
  - Cranes.
  - Communication Masts.
  - Storerooms, Machinery spaces.
  - Living quarters (internal or external).
  - Other areas as determined by the PIC.

4.6.2. Example of Offshore rig:

- Zone1: Crown to Water Table
- Zone 2: Upper Derrick to Monkey Board
- Zone 3: Travelling Equipment and TD Rails
- Zone 4: Under Monkey Board to Rig Floor
- Zone 5: Lower Substructure/Cantilever and BOP deck.
- Zone 6: Cranes (various)
- Zone 7: Jack Houses and raised platforms
- Zone 8: Navigation/Communication masts
- Zone 9: Living quarters (internal or external)
- Zone10: Other areas as determined by the OIM/PIC

4.6.3. DROPS Inspection Frequency of land rigs

Item	Zones/ Areas	Frequency
1	Derrick Zone1, Zone2, Zone3 and Zone 4 and cranes	Weekly
2	Below rig floor, Substructure, BOP and cellar area	Monthly
3	All other areas	Monthly
4	Mast	Monthly
5	Shale shakers, Mud/ cement tanks, mixing area	Monthly
6	Accommodation	Monthly
7	Other areas determined by PIC	Monthly

4.6.4. DROPS Inspection Frequency of Offshore Rigs

Item	Zones/ Areas	Frequency
1	Derrick Zone1, Zone2, Zone3 and Zone 4 and cranes	Weekly
2	lower Substructure/ cantilever and BOP deck	Monthly
3	Jack Houses and Raised Platforms	Monthly
4	Navigation/Communication Masts	Monthly
5	Living Quarters (external and internal)	Monthly
6	Other areas as determined by OIM/PIC	Monthly

4.6.5. Additional Rig Crew DROPS Inspections would be required for the following:

- Raising and lowering mast (Rig move).
- Rig up of new equipment.
- Pre spud.
- Excessive vibration (top hole).
- Fishing and jarring.
- Adverse weather.

4.6.6. DROPS Survey

Independent 3rd Party survey companies and personnel must be able to demonstrate competence in the following:

- Survey and inspection techniques.
- Industry recognized rope access qualification.
- Knowledge in working at height procedures.
- Permit to work systems (rig specific).
- Use of approved tools at height.

4.6.7. Survey Specification

The Independent 3rd Party Survey Company is responsible for ensuring that:

- All common guidelines and industry recommended practices are adhered to during the DROPS survey.
- A detailed corrective action/fail listing for equipment that does not meet industry guidelines.
- Inform the OIM/PIC of any equipment that represents an immediate danger.

4.6.8. Survey requirements

The following tasks shall be performed and captured using photographic evidence, alongside a written format for producing the DROPS Survey:

- Document the equipment location by the inspection area.
- Photograph each item.
- Describe each item.
- Inspect and record the primary and secondary retaining methodology.
- Record equipment condition as a Pass/Fail. Include comments as satisfactory or reasons and priorities based on risk for failures.
- Allocate an inspection frequency, i.e., weekly or monthly, etc.
- Generate a corrective actions list/fail list.

N.B: The independent survey company personnel are to identify and remove any equipment in immediate danger of falling, and remove any redundant material if required.

4.6.9. Documentation

Survey companies are to deliver to the Drilling contractor the following deliverables within a reasonable time frame:

- Dropped objects survey report.
- Corrective action/fail list.
- Dropped objects inspection books (by area and frequency).

4.6.10. Vendors List

All annual DROPS surveys shall be conducted by vendors on the EGPC approved vendor list.

4.6.11. Secondary Retention

Appropriate OEM compliant and installation of secondary retention on equipment identified in the compliant DROPS inspection surveys should include:

- Retention devices shall have the minimum breaking strength of at least five (5:1) times the weight of the secured equipment and shall be attached to an appropriate (separate) anchor point.
- All heavy weight secondary retention applications shall use certified wire rope slings, four (4) part shackles and certified anchor points included and logged in the lifting equipment register and inspection process.

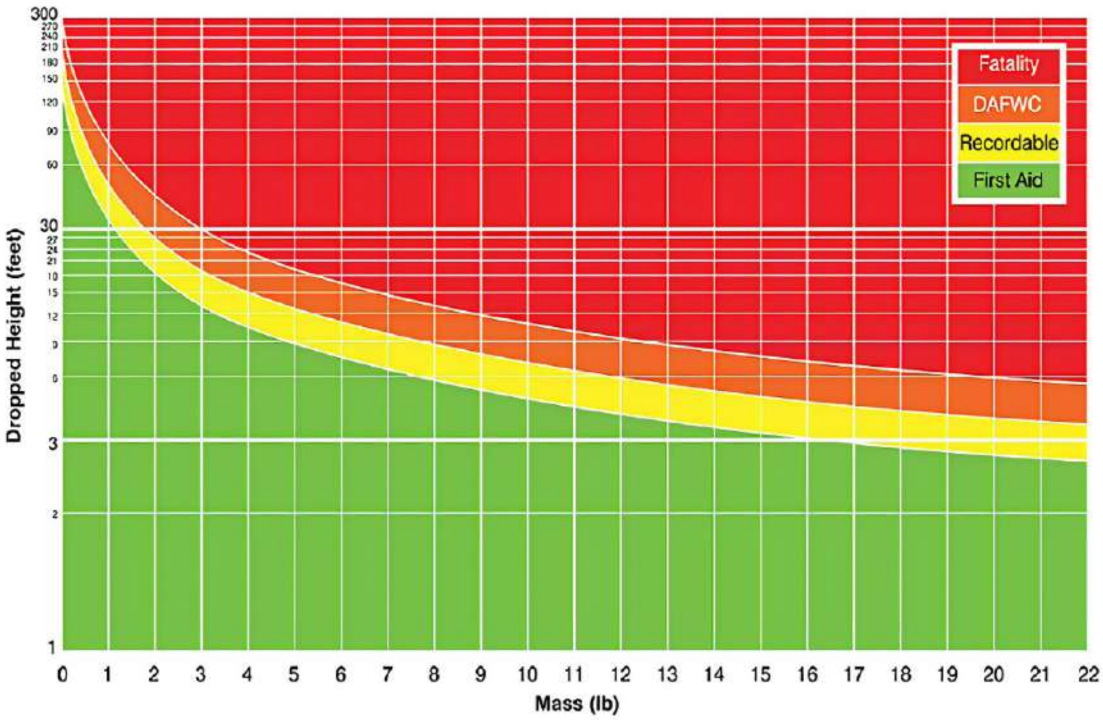
4.6.12. Examples of light and heavy weight secondary applications include:

- Light weight secondary applications include: rig lighting/flood lights, safety gates, CCTV cameras, Communication/alarm system speakers, top drive system (bolts) and signage.
- Heavy weight secondary applications include: HP mud and cementing hoses, bulk transfer hoses, Bug Blowers, Kelly Hose, monkey board, derrick fingers, casing stabbing board, crown bumper blocks, tugger sheaves and communication satellites.

4.7. Drops calculators

The DROPS calculator must be used to determine the severity of the dropped objects.

The calculator and other DROPS resources can be downloaded from: www.dropsonline.org.



B5. Rigging & Lifting

EGPC

5.1. Scope

This procedure covers all lifting gear equipment and rigging hardware used within drilling and workover contractors and service companies as well.

5.2. Purpose

Implementation and adherence to this procedure shall provide the rig management with documented means to verify that all rigging & lifting equipment in use at the rig have been tested, certified and inspected by both crew member and third party to ensure that they are fit for the intended use.

5.3. Definitions

5.3.1. Competent person

The person having the necessary practical and theoretical knowledge, experience, training, skill, and ability to perform the specific duty to which the requirement refers and shall be certified with the "APLO and Lifting supervisor" courses as minimum requirement.

5.3.2. Certification

An approved and legally acknowledged method of checking and providing written evidence that a piece of equipment has been examined and meets required standards.

5.3.3. Certificate of Conformity (COC)

It is the manufacturer's certificate that confirms that any necessary manufacturing test, or other product verification required by the standard, has been carried out and states the working load limit.

5.3.4. Color Coding

A method of marking equipment using paint to give visual indications of its certification status. This color code should be changed every 6 months (During January & July).

5.3.5. Pre-use inspection

It is a basic visual check for obvious signs of damage, it includes a function check if applicable before each use.

5.3.6. Lifted equipment

Any device that is used to suspend the load. e.g. containers, tanks, skid, etc.

5.3.7. Blind lift

A lift where at any point in time during the lifting operation the crane operator cannot see the load

5.3.8. Lifting Plan

A plan contains the details of how the lifting plan shall be undertaken, the lifting equipment and lifting accessories to be used, how the equipment and lifting accessories shall be rigged up and control measures in place to manage the risks.

5.3.9. Tandem lift

involving the simultaneous use of more than one crane, hoist or other pieces of powered lifting equipment, it is recommended that each crane be capable of lifting 75% the total load at the required boom length and operating radius.

5.3.10. Lifting Accessory

Any device that is used or designed to be used directly or indirectly to connect a load to a lifting appliance and does not form part of the load e.g. slings, hooks and fittings, swivels, hoist rings, sheave blocks, lifting harnesses, shackles, eye bolts, rigging screws, drill pipes and casing elevators.

5.3.11. Working Load Limit (WLL)

It is the maximum load (mass) that an item of lifting equipment is designed to raise, lower or suspend. WLL is designated by the equipment manufacturer.

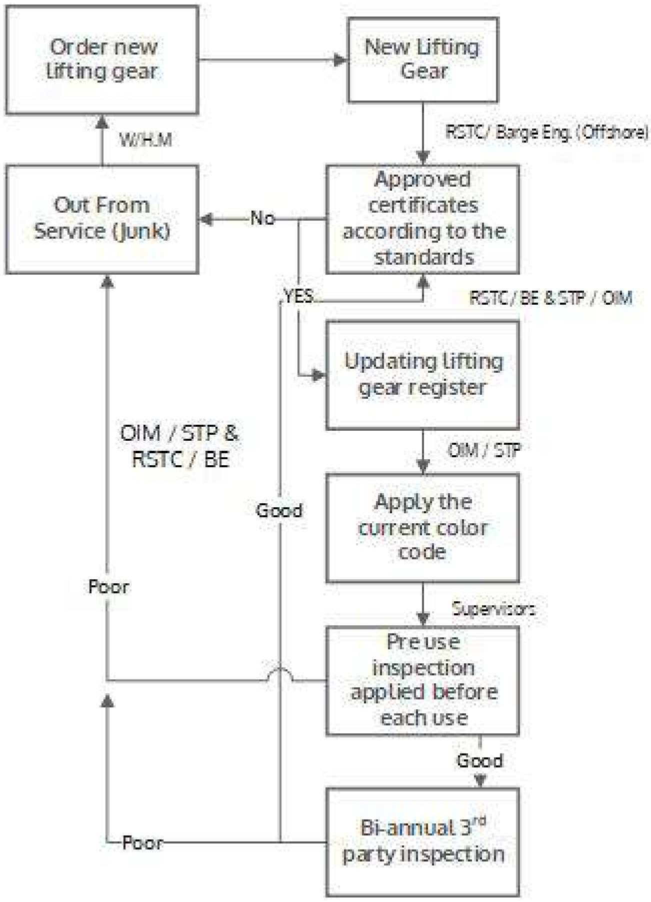
5.3.12. Safe Working Load (SWL)

The safe working load (SWL) is the maximum load the equipment can safely lift as assessed by a competent person. SWL may be equal to or less than WLL.

5.4. Responsibilities

5.4.1. STP / PIC

is responsible to maintain register of all lifting equipment's on location with the help of HSE Engineer.



5.4.2. Rig Superintendent

- To ensure that relevant staff / Contractors preparing cargoes from contractor shore bases, warehouse and Contractors to pier / port are aware of contents of these guidelines.
- Shall provide the rig with the required safety equipment for safe cargo handling operations.

5.4.3. OIM

- Is responsible for installation safety, personnel on board and any operation within the safety zone affecting the installation safety, OIM may delegate operational task to other competent person.
- Report cargo handling incidents and nonconformities to Rig Supt. & Client representative.

5.4.4. HSE Engineer

- Shall stop any unsafe act / unsafe observation related to cargo handling and discuss with the crew the safe way of operation.
- Report cargo handling incidents to OIM & HSE Section Head.
- Participate with Incident Investigation Team to find out the root causes & corrective actions.
- Ensure that learning lessons from incidents have been delivered to all personnel on board through HSE meetings.

5.4.5. Barge Engineer

- Shall prepare the required documentation before loading is initiated for cargo to be shipped ashore by the vessel.
- Preparation for required paperwork such as PTW, PJSM, JSA, Checklist etc.

- Shall be, or his delegates, responsible for cargo handling operations.
- Ensure that the supply vessel Captain has been informed about simultaneous operations being carried out by the rig which may affect the supply vessel.
- Shall submit documentation to the vessel Captain before any cargo is loaded on board the vessel.
- Must ensure drilling rig operations do not present a hazard to vessels alongside specially where over-side discharges may contact or fall on a vessel working alongside.
- Shall approve commencement of an operation and has the authority to stop any operation.
- Must ensure there is a good level of communication between the vessel crew and the drilling rig crew.
- Shall ensure that prior to lifting cargoes on board the rig, those cargoes shall be checked on board the vessel by a competent person whom has the authority to refuse lifting any cargo against foreseeable hazards.
- J. Must not pressurize vessel Captain to take or execute any decision which in the
- Captain's professional judgement, compromises the safety of vessel and or crew.

5.4.6. Rig Marine Crew

- Rig marine supervisors and follow workers are responsible for both their own safety and the safety of those they work with, all crew must always work safely to prevent accidents.
- Identify foreseeable hazards and report it immediately to job supervisor.
- Establish and communicate a clear work scope with vessels to avoid confusions.
- Crew has the authority to stop any operation if unsafe or if in doubt stop and discuss with your supervisor.
- Crew shall use the required PPE as per EGPC Occupational Health & Safety Procedure.
- Crane Operator must:
  - Perform cargo check and complete cargo checklist form.
  - Review the cargo manifest to identify the weight of loads.
  - Communicate with the supply vessel or supervisor on deck to verify the load being lifted is correct item listed on the manifest.

5.5. Lifting Gears and Rigging Hardware

Lifting Gear Equipment and Rigging Hardware includes but are not limited to:

- Wire Rope Slings
- Web Sling
- Shackles
- Man Basket
- Pad Eyes
- Personal Elevator
- Chain Blocks
- Turn Buckles
- Cross Lifter
- Master Bushing Lifter
- Pallet Lifter
- Forklift Forks
- Container Lifting Points
- Rams Lifting Eyes
- CSE Rescue Winch
- Swivel of Air Hoist
- Big Bag Rings
- Drum Lifter
- Life boat, rescue boat, winches/davits, and stretchers with lifting points and bridles.
- Crane Hooks
- Snatch Blocks

5.6. Lifting Requirements

- All lifting equipment shall be visually inspected before use to ensure the
- color code is per current Color Code Scheme, with SWL clearly marked.
- Operators of lifting equipment are deemed to have received the required
- training and have been certified to operate subject equipment.
- All Crane operator certifications shall be valid and verified before the crane
- operator is sent to location.
- MODU (Mobile Offshore Drilling Unit) crane operators shall follow the client Requirements. All marine/offshore crane operators shall have successfully completed the medical examination prior to applying for initial certification.
- Crane operator shall perform a daily pre-operational safety inspection, prior
- to operating his assigned crane, or whenever operators change, using
- "Crane Daily Check List", based on crane manufacturer's daily inspection checklist.
- At the beginning of each shift and before operating the forklift truck, check
- its condition, using "Forklift Daily Check List", These Inspections are to be reported and signed by Rig Maintenance and Management PICs. Records of these inspections are to be maintained in rig locations for a minimum of one year.

Note: The use or possession of mobile phones and tablets is prohibited inside the crane / forklift cabins.

- All sling types shall have identification information permanently affixed with
- durable identification tags or wire rope swages and shall be maintained
- legible during the life of the sling.
- Sling proof-load test certificates shall be properly filed.
- Aluminum Ferrules are specifically prohibited on all wire rope slings.
- Use of slings that have been repaired shall be prohibited.
- All attaching devices (i.e., rings, links, coupling pins, etc.) shall be selected to provide capacities equal to, or greater than, the slings used.
- Approved, self-closing safety latches shall be used on all hooks designed for
- safety latches.

5.7. General Instructions

- The rigging hardware manufacturer's rated SWL capacity shall not be exceeded.
- The maximum allowable speed for the lifting operation is 25 knots or as per OEM instructions (the less shall be selected)
- Slings shall be shortened, or otherwise adjusted, only by methods approved
- by the sling manufacturer.
- Slings shall not be shortened or lengthened by knotting, by re-splicing, or by
- wire rope clips.
- Eyes in wire rope slings shall not be formed using knots.
- Once the task involving webbing, synthetic slings has been completed, the slings shall be inspected by a competent person.
- Slings shall be hitched in a manner that provides the best control of the
- load.
- The running line of wire rope sling must come to shackle bow and not on the
- bolt while using the choke hitch loading.
- Slings or other rigging hardware in contact with sharp corners shall be
- padded with material of sufficient strength to minimize damage to the sling,
- other rigging hardware, and / or the load being lifted.
- Working conditions that may affect slings and other rigging hardware shall
- be considered, with special attention to temperatures, chemicals, abrasions, etc.
- Horizontal sling angles less than thirty degrees (30°) shall not be used.
- Each tubular lift shall always be slung with two slings, each of the same length and of the same SWL. The SWL of each sling should be equal to or greater than the Gross Weight of the load. Slings shall be placed at equal distance (approximately 25%) from the ends of the load with the

internal angle at the hook not greater than 90 degrees.

- Bundle tubulars of different sizes is prohibited.
- Barrel lifters shall be utilized while transferring chemical / engine oil / coolant
- drums using the forklift or the crane from the storage area to work area.
- Hooks are not allowed to be used with lifting hoists to lift equipment on the rig floor.

While using web sling the mentioned below requirements must be considered:

- Web sling is final choice.
- Web sling must be in secured storage area controlled by PIC (locked).
- Only used under PTW mentioning in it the web sling Serial no.
- Pre-use inspection for certification validity and Condition Check for wear, cuts and abrasions. The surface tension resulting makes damaged fibers or cuts easier to see. Watch for frayed edges, broken fibers pulled stitches, cuts, burns and chemical damage.
- Observe closely for any breaks in the stitching.

Ensure that:

- Made from synthetic materials with a safety factor of 7 to 1.
- Synthetic web slings are to be permanently marked with the manufacturer's name, stock number, type of material, and rate loads for different types of hitches.
- Web slings are not to be used where fumes, vapors, sprays, mists, liquids
- of acids.
- Web slings are to be immediately removed from service if any of the following conditions are present:
  - acid or caustic burns, melting or charring of any part of the sling surface, snags, punctures, tears or cuts, broken or worn stitches, or distortion of fittings.
  - Never lift load Exceed the SWL of the Web sling

Synthetic Web Slings. 1 Ply. Triangle & Eye/Eye type. Related capacity in pounds						
Sling body width (inches)	 vertical	 choker	 Vertical basket	 60 deg. basket	 45 deg. basket	 30 deg. basket
1	1,000	750	2,000	1,700	1,400	1,000
2	2,000	1,500	4,000	3,500	2,800	2,000
3	3,000	2,200	6,000	5,200	4,200	3,000
4	4,000	3,000	8,000	6,900	5,700	4,000
5	5,000	3,700	10,000	8,700	7,100	5,000
6	6,000	4,500	12,000	10,400	8,500	6,000
All angles shown are measured from the horizontal						

5.7.1. Storage

- All unused lifting accessories shall be stored in a dry place, kept away from the outdoor weather conditions.
- The unused accessories for a long time shall be kept inside a storage area (i.e. Container) or be covered by plastic sheets.
- Stored slings shall be lubricated by their specific lubricants to avoid corrosion.

5.7.2. Inspection

5.7.2.1. Pre-use Inspection

Visual examination by competent persons (STP, NTP, Driller, AD, HSE Engineer) prior to use. Records are not required. A pre-use inspection should include such things as:

- Broken wire
- Kinks or dictions of the sling body

- Condition of eyes and splices, and any attachment hardware
- Reduction in diameter of the rope
- Any damage
- Corrosion

Whenever a sling is found to be deficient, the eyes must be cut, or other end attachments or fittings removed to prevent further use, and the sling body discarded.

5.7.2.2. Periodic Inspection

Detailed visual, MPI & load test inspection by a certified rigger / rigging competent person performed as per OEM requirement or latest client approved intervals. The inspection is recorded in the lifting gear register listing any deficiencies found.

Periodic inspections records shall be kept for the life of the rigging & lifting equipment and, as a minimum, include the following information:

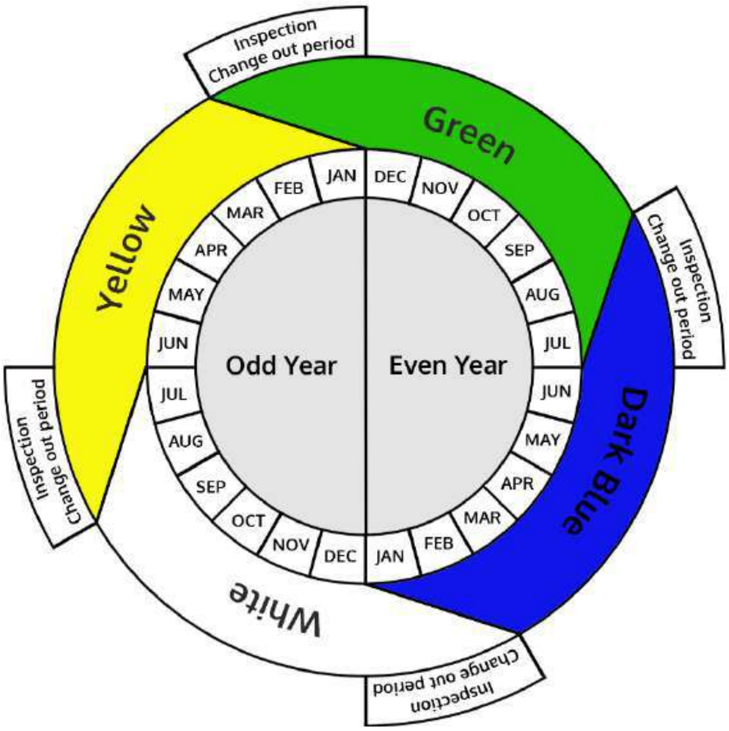
- Frequency of use
- Severity of service conditions
- Nature of lifts being made
- Experience gained on the service life of slings used in similar circumstances.

All safety devices provided on MODU cranes such as boom stops, boom angle indicators, and anti-two-blocking switches and any other limit switch, shall be kept in proper working order and diligently function tested during each required pre-operation safety inspection.

All lighting installed on a MODU crane by the manufacturer, including boom lights, travel lights, instrument panel lights, and warning lights shall be properly maintained and used. All lights shall be included in Rig DROPS program.

5.7.3. Color Code

- All new lifting equipment placed in service must be marked with the current color code.
- Defective or damaged rigging hardware or rigging hardware shall be immediately removed from service and shall be destroyed to prevent further use. Slings removed from service shall be recorded in the sling inspection log maintained by the rig (Lifting Gear Register).
- Updating Color code shall be done only by third party competent person.
- Lifting accessories, which are incorrectly color coded shall be stored in a separate clearly marked area and returned for re-inspection, certification and color coding.
- Rejected items shall be marked red and put out of service until they are disposed off.



5.7.4. Rejected Lifting Equipment

Lifting gear equipment's shall be rejected when:

- There are broken wires - For 6-strand wire rope slings, 6 randomly distributed broken wires in one rope lay, or 3 broken wires in one strand of one rope lay.
- There is metal loss - Wear or scraping of one-third the original diameter of outside individual wires.

- There is distortion - Kinking, crushing, bird caging, or other damage which distorts the rope structure.
- There is heat damage - Any metallic discoloration caused by exposure to heat.
- There is bad end attachment - Cracked, bent or broken end fittings caused by abuse, wear or accident.
- There is corrosion - Severe corrosion of the rope or end attachments.
- There is Pulled Eye Splices - Any evidence that eye splices have slipped.
- There is mechanical damage - One of the most common causes of damage
- is the kink which results from pulling the sling body through the loop (choker hitching), thus causing wires or strands to be deformed and pushed out of their original position.
- Metal plates with securing bolt is an approved method for Plugging infrequently utilized components and shall be listed as Quarantined (Removed from the Periodic Inspection Process) until required for use and then load tested and post load test MPI prior to use.
- Defective or damaged rigging hardware or rigging hardware that does not comply with above requirements, shall be immediately removed from service and shall be destroyed (Eyes on both ends must be cut off) to prevent further use. Slings removed from service shall be recorded in the sling inspection log maintained by the rig (Lifting Gear Register).

5.7.5. Lifting Gear Register

Each rig shall keep the lifting gear register updated up to date as per safety inspections conducted by the rig. Lifting Gear Register should contain:

- Cranes + Crane Wires
- Gas Cylinder Racks, Cargo Baskets, Container lifting points and offshore
- equipment skids
- Personnel Work Baskets, personnel transfer baskets, hydraulic operating
- telescoping derrick baskets
- Slings
- Shackles
- Winches
- Hoisting equipment
- Certified Chains
- Wire rope
- Pad-eyes and anchor points
- Turfers
- MODU Flare Booms and Flare Boom King Post Anchor Points and Pad-eyes
- Big Bag Handling System and bag lifting devices
- Snatch Blocks and Pulleys
- High Pressure hose and pipe (HP) Secondary Restraint slings and clamps
- Heavy weight secondary restraint slings, shackles and clamps
- Any other lifting accessories.

N.B: The register must include the mentioned below information's:

- OEM Serial number or Unique Rig ID.
- OEM Design Certificate Number.
- Lifting Equipment Designation / Location (i.e., hoist wire, sling, shackle, padeye,
- etc.).
- Safe Working Load (SWL) and Proof Load Test.
- In-service date.
- Prior Out-of-service date, if applicable.
- Inspection Results (i.e. Fit for Service, Quarantined, and Rejected).
- Next Required Inspection (i.e. Visual, Annual Load Test / MPI, etc.).

All lifting equipment entered into the comprehensive registry shall have complete trace ability which includes the following minimum OEM Identification and Design Information Certifications:

- Unique Serial Number / Equipment ID and associated OEM Design Certificate.
- Compliant sling certificates defining the Design Safety Factor (Minimum 5:1), SWL, and Proof Load Test shall accompany.

- In-Service Date, Location, and Required Inspection Frequency.
- Last Inspection, Next Required Inspection, Fitness for Service.
- A Compliant Proof Load Test shall be as follows for all anchor points and padeyes:
- All Man Lifting Devices (Man Baskets, Casing Stabbing Boards and Adjustable
- Height Texas Decks that are designed to lift personnel) shall be proof load tested following international applicable standards.
- All Anchor Points, Fixed Texas Deck and Pad-eyes shall be proof load tested following international applicable standards.
- Marine Towing System SMIT Bracket, Closed Chock & Bollard are exempted from the periodic proof load test inspection and only annual NDT inspection is required, the rig shall maintain the initial as built certificate.
- Lifting equipment to be inspected by a D&WO approved third party.
- MODU shall maintain a register for crane's wires replacement in accordance with Manufacturing recommendations and wires specifications for Main Block,
- Auxiliary Block and Boom, the following information shall be verified and entered into the register.
  - Frequency of wire replacement
  - Last wires replacement date
  - Next due replacement date

5.8. Lifting Operation Plan

- All lifting operations must be properly planned and supervised by a competent person with the required knowledge and training.
- Based on the lifting operation parameters and conditions, select the category of the lifting plan as per the lifting categorization checklist to get the proper categorization for any lifting operation, whether It is Routine, non-routine simple, non-routine complicated, or non-routine complex lifting operation.
- A PTW, JSA and pre-job safety meeting should be conducted prior commencement of the lifting operations. This shall be the responsibility of the person in charge of lifting operation.
- Make sure that a categorization checklist is attached to the lifting plan document all the time.
- Personnel involved in lifting operations must be selected by the person responsible for the lifting operation based on their experience and skill.
- During lifting operations, a clear means of communication should be established between crew members conducting the lifting operation.
- Visual and audio signals during lifting operation should be given by competent personnel who are designated at the beginning of the lifting operation to give required signals.
- When visual communication is not practical, radio communication should be used, extra
- Personnel should be posted to relay signals, and or instructions to personnel involved in the lifting operations.
- All loads to be examined by a competent person before the execution of the lifting operation to ensure integrity of the load and suitability of lifting equipment used.
- Load path should be clear of obstructions and shall when practical be marked to avoid personnel working or passing under load.
- Lifting operations by night shall be conducted when sufficient light is provided in both lift and landing areas.
- Ensure that shackle bolts are tight, slings are of equal length, cargo containers, and appropriate Rigging of the lift applied and loads are balanced when being lifted.
- The working load on winch mechanisms, hoists, lines, slings, grommets, hooks, pad-eyes and fittings shall not exceed the labeled / tagged Safe Working Load (SWL).
- The SWL and unique identification number shall be displayed on each lifting device and each piece of rigging hardware in order to facilitate tractability through the lifting equipment registry. New lifting equipment shall be accepted for use based on Certificates of Conformity (If COC still valid).
- OEM Certified four (4) Part Shackles shall be installed on all fixed pad-eye anchor points such as cylinder racks, cargo baskets, HP Secondary Retention Sling Clamps, Man Baskets, sheave

block anchor points, SRL anchor points and overhead shackle installation applications.
N.B. Four (4) part shackles are intended for use on permanent / semipermanent (temporary installed) installations and where man lifting operations are taking place at rig floor.

- If in doubt lifting operations must be stopped until assured.
- Lifting plan for critical lifting operation shall include but is not limited to:
  - Lifting plan Ref. number
  - PTW Ref. number
  - SJA Ref. number
  - Brief description of lifting operation
  - Category of lifting operation(i.e. routine, non-routine simple, non-routine complicated , non-routine complex)
  - Lifting gears and accessories data
  - Wind speed
  - Load data
  - Crane configuration and calculations
  - Communications method (i.e. Radio, verbal , signals)
  - Lifting operation step by step
  - Lifting operation sketch.
  - Lifting team members, their roles and signature

5.9. Lifting Operation

5.9.1. Routine

- Load with known and evaluated weight, shape and center of gravity.
- Suitable environment conditions.
- Standard rigging arrangements.

5.9.2. Critical

- When the load exceeds 85% of the SWL of the lifting equipment.
- Use of two or more items of lifting equipment (tandem lift).
- Personnel lifting e.g. man basket, man riding.
- Transferring Hydrocarbons "Don't use Man basket if the wind speeds exceeding 38 km/h (23mph – 20 knots – 11 meters/second).
- MODU Crane operations shall not be conducted above a Wind Speed of 32 km/hr., unless the crane manufacturer has specifically rated the unit to operate at a higher defined wind speed
- Lifting operations near power lines/facilities

5.9.3. Categories

The additional controls and minimum supervision level for each category are explained in the table below:

Lifting category	Controls	Minimum supervision level	Minimum Competencies
Routine Lifting Operation	PJSM and SJA shall be issued.	Onshore: Derrick Man or A/D or RAF Offshore: Crane Operator or A/D	Safety Management System (SMS) Basic Rigging &Lifting
Non-Routine Simple Lifting Operation	PTW, PJSM and SJA are required plus a higher level of supervision might be required (e.g. Barge Engineer, Truck pusher, Senior Tool Pusher)	Onshore: Derrick Man or A/D or RAF Offshore: Crane Operator or A/D	Safety Management System (SMS). Basic Rigging &Lifting

Lifting category	Controls	Minimum supervision level	Minimum Competencies
Non-Routine Complicated Lifting Operation	PTW, PJSM and SJA are required plus a higher level of supervision might be required (e.g. Barge Engineer, Truck pusher, Senior Tool Pusher)	Onshore: Driller Offshore: Barge Engineer or Day/Night Pusher	Safety Management System (SMS). Advanced Rigging &Lifting
Non-Routine Complex Lifting Operation	PTW, PJSM, and SJA shall be issued. Specialized expertise added to the lifting team, which may be expanded to include several Personnel needed to complete the lifting Operation safely Engineering techniques are needed.	Onshore: NTP or STP Offshore: Barge Engineer or Day/Night Pusher	Safety Management System (SMS). Advanced Rigging &Lifting

5.10. Lifting operation instructions

- All lifts must be controlled by a dedicated and competent banks man who has been identified at the pre-task safety meeting with clear communications and signals agreed before commencing. In addition, the banks man will be identified by high visible vest and must never be involved in any rigging or slinging activities.
- The Banks man is not a part of the load handling team; he shall not attempt to assist the riggers at any time. He shall remain at a remote distance from the operation where he can clearly see the riggers, the load and the crane operator at all times.
- The competent banksman shall direct heavy equipment movements in high impact areas, conjected or tight areas in which are hazardous (e.g.in between/behind mud tank areas, behind the rig minicamp, chemical storage areas or other areas which are hazardous to personnel and assets).
- A tag line shall be used to control the movement of a load being raised or lowered.
- The tag line shall not be wrapped around the forearm or around the body, Wide loads must be controlled by two taglines from one side of the load and away from line of fire.

5.11. Lifting of Personnel

- Lifting of personnel shall be avoided unless the risk has been demonstrated as being as low as reasonably practicable (ALARP).
- Lifting of personnel shall be according to a specific personnel lift plan for that lift.
- Lifted personnel shall be properly secured with lanyards unless written procedures and risk assessment require otherwise.
- The equipment used for lifting personnel for work and for personnel transfer shall be specifically designed, approved / certified and clearly marked as suitable for personnel lifting. Any equipment not so marked shall not be used for personnel lifting.
- Lifting accessories and lifted equipment used for lifting people shall not be used for any other purpose. The factor of safety required for lifting people shall be higher than for lifting normal loads, typically this is double for personnel lifting activities.
- Environmental and other limits for personnel lifts shall be set out in the lift plan with
- Clarity on where they differ from limits for other lifting. In case of any changes in job scope or conditions, the job shall be made safe and stopped, risks re-assessed and a pre-job safety meeting executed before the job is re-started.
- Example of such A rescue plan shall be prepared for all personnel lifts as part of the lift plan and attached to the PTW form. All equipment required to implement the rescue plan shall be readily available prior to and during the lift. Rescue plans shall be practiced at regular intervals

N.B: Rescue operations can introduce their own hazards, therefore the planning and execution of rescue exercises requires particular care and attention including additional risk assessments.

- All personnel involved including those being lifted shall have received the necessary specific training.
- A test lift without personnel shall be carried out where there is confined access, potential for snagging or other hazard.
- Personnel transfer by lifting shall not be permitted in hours of darkness unless specifically approved by the PIC and supported by thorough risk assessment and assessment of alternative.
- Onshore Rigs Operating Man Baskets shall not be conducted above 38 km / hr. or 23 mph (20 knots – 11 meters / second) wind speed.
- Offshore rigs Transfer of Personnel by Personnel Basket operation shall not be
- conducted above 20 knots wind speed. A safety line shall be used on each personnel basket. The crane hook shall be equipped with a safety latch.
- Each personnel basket used for transferring personnel by crane between an offshore rig and crew boat shall:
  - Have current lifting gear certification.
  - Be in good condition
  - Provided with an adequate number of approved life preservers or buoyant work
  - vests.
  - It shall be stored and covered when not being used.
- The competent person planning the operation should have adequate practical and theoretical knowledge and experience of planning lifting operations.
- The crane capacity load chart shall be de-rated fifty percent (50%) when performing a personal lift and an approved Critical Lift Plan shall be available on site, prior to any personal lift.

5.11.1. Man riding

- Man riding must be kept to an absolute minimum and shall only be performed under the strictest of controls and must only take place under the direct supervision of the Senior Tool Pusher or Night Pusher of the rig that shall nominate only competent person to perform tasks.
- The approval of the man riding shall always be with the OIM/STP/Night Pusher unless the rig is assigned to the Tow master (in offshore rigs).
- For Workover Rigs which have not Night Pusher, at night shift man riding must only take place under the direct supervision of the Driller.
- Adverse weather conditions and lighting conditions should be assessed prior to the commencement of any man riding operation, this is determined by the rig management.
- Dedicated Man Riding winch shall be used solely for hoisting and lowering personnel and must incorporate the following safety features in their design:
  - Drum guard standard to protect operator.
  - Lift-to-Shift variable speed lever provides precise control and built-in safety
  - Slack wire detector automatically stops the winch from paying out in case of slack wire
  - Filter, regulator, lubricator air preparation package included to protect internal components (for air operated man riders)
  - Emergency lowering system
  - Emergency stop button.
  - Emergency lowering button.
  - A clutch capable of disengaging should not be fitted.
  - Overload limit switch.
  - For the Hydraulic operated man riding winches should have a self-locking & self-braking system fitted.
  - In the event of failure of the automatic brake a secondary brake should be provided to prevent the load from failing. This may be manual in operation and simple in design.
  - A device should be fitted to prevent the winch from over-riding or under-riding
  - Anti-spin wire should be used
- The dedicated man-riding hoist stating “For man riding purpose only” and the Safe Working Load should be clearly identified.
- One system of hand signals MUST be used in all rigs (Man riding Tuggers Signals Board.
- Winch operator to keep man rider in view at all times.
- The employee must be shackled directly onto the end of the man riding hoist line without any

intervention (Shackle must be secured).
- When man riding operations are taking place, all other activities in the vicinity shall be suspended. At no time shall the travelling blocks be moved or pipe rotated. No other activity shall interfere with man riding operations.

5.11.2. Hands Free Lifting

5.11.2.1. Tag Lines:

- The tag lines shall:
  - Free of any knots.
  - Attached to the load.
  - It length ensures that the person holding the line is stand in clear area during handling the load.
  - Have 45° angle with the vertical line.
  - Not to be tied to any objects or wrapped around a hand.
  - Have additional slack length.
- In case of two lines, they shall be from one side of the load.

5.11.2.2. Push & Pull Stick:

- The Push & Pull Sticks are normally made of aluminum, wood or fiberglass & has an average length around 2 meters.
- The main purpose for it is to keep the personnel remote from the load.

5.12. Offshore Cargo Handling Procedure

5.12.1. Communication

- All radio communications shall be conducted in an understandable Language.
- Offshore cranes shall also be equipped with two-way means of communication with the supply boat.
- When rig operation requires radio silence, so prior to the Start of radio silence the vessel's Captain shall confirm to OIM / Barge Engineer that all radio silence procedures are being correctly observed.
- Continuous communication is a MUST with blind lifts, if there are no communication no crane movement.

5.12.2. Vessel anchoring at Jack-Up Rig for Supply Purposes

- The Barge Engineer or his delegate must give the supply boat clear instructions about the safe anchoring location.
- When laying an anchor for use in a mooring system to a Jack-Up rig the anchor is to be paid out under tension.
- All rig provided moorings will be inspected periodically by rig personnel, moorings with deficiencies shall be reported immediately to Barge Engineer.
- Conduct & maintain a clear communication between rig & vessel.

5.12.3. Loading and Offloading

- Scope of work shall be communicated prior starting the cargo handling operations.
- Wind speed shall be checked and reported to Barge Engineer or his delegate prior starting the operation.
- The approved Color Code of lifting equipment shall be followed.
- Defective or damaged rigging hardware that does not comply with EGPC
- Rigging & Lifting Equipment Procedure shall be immediately removed from service.
- Visual check is required on board the vessel by a competent person prior to loading / offloading on all lifts for loose Items (tools. debris, etc.) or improper securing methods or improper stacking of materials, unsafe observations shall be reported to Barge Engineer or his delegate.
- A competent person shall inspect the lifts for potential dropped objects.

- Do not under any circumstance accept / lift an unsafe load on supply vessels.
- All backloads should be pre-planned to ensure safe operation.
- Crane operators should swing the load away from the vessel deck before hoisting or lowering to reduce the risk in case of lift failure.
- MODU's shall have a minimum of two certified big bag lifting devices and two certified crane big bag lifting devices for off-loading supply boats.

5.12.4. Snatching Operation and Maneuvering alongside

- Snatching of materials is not permitted when sea height exceeds 1.5 meters.
- Wind speed shall be checked and reported to Barge Engineer or his delegate prior starting the operation.
- Vessel's Captain is not, under any Circumstances, to place the stern or any portion of the vessel between the legs or under the hull of the Jack-Up rig.
- Conduct & maintain a clear communication between rig & vessel.

5.12.5. Bulk Cargo Operations

- Jack-Up rig and vessel shall be communicated properly about the job planning to avoid undesired mistakes.
- MSDS shall be provided & discussed prior to transferring hazardous materials such as OBM & brine.
- Bulk hoses shall be of sufficient length.
- Ensure that hoses, slings and lifting points are visually inspected prior to starting the operation.
- Hose should be slacked before the vessel crew secure the hose and disconnect the crane wire.
- Hoses shall be remaining afloat at all times by using sufficient floatation devices.
- Watch man from the rig shall be assigned to avoid any discharge to environment.
- Shipper and receiver should confirm quantities discharged and received at regular intervals to ensure there are no leaks.
- Not allowed to close out valves against a cargo pump.
- Not allowed to transfer any other liquids using potable water hoses.
- Heavy sections of reducers or connections at hose ends shall be avoided.

B6. Working at height

EGPC

6.1. Scope

This procedure applies to all Drilling and Workover companies or Service companies to ensure all risks associated with working at height are identified and managed.

6.2. Purpose

The purpose of a working at height procedure is to prevent falls from height, which are a major cause of workplace injuries and fatalities. The procedure outlines the steps that must be taken to identify, assess, and control the risks associated with working at height.

6.3. Definitions

6.3.1. Work at Height:

Work at height is an activity at an elevated location of more than 1.2 meters (4 feet) high from the working ground level including work at/near the edge from where a person can fall through an open surface in a floor opening or hole/pit/excavation or through fragile surface or work over water.

6.3.2. Fall Arrest System:

Equipment or material or a combination of both that is designed, to arrest the fall of a person.

6.3.3. Restrained fall:

The person is partially restrained by a restraining device and the fall is arrested.

6.3.4. Anchor Point:

It is a fixture to which a person anchors the line with a hook, to be held securely and to prevent a fall. This point must be able to withstand a weight of 5000 lbs (2.25 ton) for each person anchored.

6.3.5. Guardrail:

A barrier at least 42 inches high is erected to prevent personnel from falling from working levels more than 30 inches above the floor, ground, or other working areas of a building.

6.3.6. Tie-off:

A procedure of connecting directly or indirectly to an anchorage point.

6.4. Responsibilities

6.4.1. Person in charge of the Rig/workplace

- Ensuring that the procedures are implemented in the workplace.
- Identifying all tasks that involve working at height in the workplace and its hazards in collaboration with employees and contractors/3rd parties.
- Provide appropriate height access equipment such as portable ladders and work platforms that are inspected and appropriate for use.
- Ensuring risk assessments/safe job analyses are conducted for identified working at height tasks.
- Confirming issuance of a permit to work to contractors or employees who will be working at a height of 1.2 meters or above.

6.4.2. HSE Engineer

- Verifying that the guidance at the procedure is implemented and understood in the workplace.
- Ensuring that the company’s employees attended the required working at height courses.
- Verifying that appropriate height access equipment such as portable ladders and work platforms that are inspected and appropriate for use.

6.5. Procedures

The rig/concerned area PIC shall follow the below sequence to comply with the Procedure:

- Identifying all the work height tasks
- Review the Work at height risk and control mentioned at the risk register to identify minimum control measures in place and add more measures by following the hierarchy of Fall Protection.
- The SJA must be reviewed and updated (if needed) before rig up or if the equipment changed e.g., skidding cantilever to ensure that all working at height areas were assessed and covered with appropriate mean.
- Use the appropriate pre-use checklist (I.e. Working at height checklist, Man riding checklist) before commencing the working at height activities.
- Fall protection equipment must be inspected and recertified bi-annually by a Competent 3rd party inspector.
- Any fall protection device with any damage shall be immediately removed from service and junked in addition to updating the Lifting Gear Register.

The following are requirements that you need to consider when planning and undertaking work at height but not limited to the following, you shall:

- Take account of weather conditions that could compromise worker safety.
- Check that the place (e.g. a roof) where work at height is to be undertaken is safe.
- Each place where people will work at height needs to be checked every time, before use.
- Stop materials or objects from falling or, if it is not reasonably practicable to prevent objects falling, take suitable and sufficient measures to make sure no one can be injured, e.g. use exclusion zones to keep people away or mesh on scaffold to stop materials such as tools falling off.
- Store materials and objects safely so they won't cause injury if they are disturbed or collapse.
- Plan for emergencies and rescue, e.g. agree a set procedure for evacuation.
- Think about foreseeable situations and make sure employees know the emergency procedures.

6.6. Rescue Plan

Job specific rescue plan should be developed before installing the harness system. It's critical that a suspended worker can be promptly rescued. Rig operators shall review and approve this plan.

6.6.1. A rescue plan should consider:

- The rescue method, i.e. use of a crane or elevating work platform
- Available equipment
- Responsibilities and training
- Communication
- Medical requirements
- Involving the emergency service

Note:

Work at height rescue plans shall be in place, reviewed and well understood from the personnel involved in performed job to verify that work group members know well the roles during running the work at height job.

6.7. Working at height safety accessories

6.7.1. Safety Harness

6.7.1.1. Pre-Use Inspection of Safety Harness:

- The visual check should be undertaken in good light.
- Inspect harness hardware (buckles, D-rings, back pad, loop keepers); these items must not be damaged and must be free of sharp edges, burrs, cracks, worn parts, or corrosion.
- Ensure buckles work smoothly.
- Inspect webbing; material must be free of cut or broken fibers and check for tears, abrasions,

mold, burns, or discoloration.
- Inspect stitching; Check for pulled or cut stitches. Broken stitches may be an indication that the harness has been impact-loaded and must be removed from service.
- Inspect labels; all labels should be present and fully legible.
- If inspection reveals a defective condition, remove the harness from service immediately and destroy it.
- When returning the harness, ensure that it is clean, in good condition, and ready for the next use.

6.7.1.2. Maintenance of safety harness:

- Clean the harness with a mild soap or detergent and warm water.
- Don't use high-pressure cleaners.

6.7.1.3. Storage of safety harness:

- In cool, dry, and clean condition.
- Out of direct sunlight.
- Away from direct sources of heat.

B7. Risk Management

EGPC

7.1. Scope

This procedure applies to all onshore and offshore drilling and workover rigs, assets and facilities controlled directly by D&WO Operations. D&WO Operation's contractor and service companies will execute aspects of the programs. Rig Contractors and service companies shall also have a Risk Management System that meets the D&WO Risk Management Policy.

7.2. Purpose

Outline the risk management activities to protect people, environment, and preserve company assets. This procedure shall be used in conjunction with the Risk Management Training Package.

7.2.1. The Risk Management Process shall be applied in the following circumstances:

7.2.1.1. General

- Operations in new areas or under new circumstances.
- Execution of new operational requirements.
- Implementation of new technology.
- Significant change in operational process, procedure, operational condition, design intent of equipment, tools, material, and existing safeguards and barriers.

7.2.1.2. Engineering (with Operations input) – Office based

- Well Planning stage including Well Approval Process and/or Workover Candidate Proposal
- Well program development stage during well design and approval process.
- Changes in well program.

7.2.1.3. Operations (with Engineering input) – Rig based

- Well construction activities Onsite (Wellsite, Rig site and Campsite) Rig move activities.
- Managing well related activities, e.g:
  - Drilling program implementation.
  - Unplanned arising conditions.
  - Any other situation as may be required by management.

7.3. Definitions

7.3.1. Risk

Risk can be defined as the combination of the likelihood or probability of an event (including changes in conditions, circumstances) and its consequences. Likelihood X Consequence (severity) = Risk.

7.3.2. Risk source

Element which alone or in combination has the potential to give rise to risk.

7.3.3. Hazard

An object, substance, condition, situation, practice or behavior with the potential to interrupt or interfere with the orderly progress of an activity being carried out, and which has the potential to cause harm to people, equipment, property, or environment.

Hazard can be a risk source.

7.3.4. Event

Occurrence or change of conditions, circumstances. It may trigger by a cause or causes.

An event can also be something that is expected, but does not happen; or something that is not expected, but happens. An event can be a risk source.

7.3.5. Cause

Mistake(s), action(s) or failure(s) followed by an event or events.

7.3.6. Consequence

Outcome of an event affecting objectives. Consequences can be expressed qualitatively or quantitatively.

7.3.7. Risk description

A structured statement of risk usually contains four elements: Risk sources, Events, Causes, and Consequences.

7.3.8. Likelihood

Likelihood is the chance of something happening.

Likelihood can be described qualitatively using general terms or quantitatively, mathematically such as probability or frequency.

7.3.9. Probability

Measure of the chance of occurrence expressed as a number between 0 and 1, where 0 is impossibility and 1 is absolute certainty.

7.3.10. Frequency

Number of events or outcomes per defined unit of time.

7.3.11. Level of risk

Magnitude of a risk or combination of risks, expressed in terms of the combinations of consequences and their likelihood.

7.3.12. Potential Risk

Risk level before the risk treatment.

Potential Risk can also be defined as the interaction with uncertainty. Uncertainty is a potential, unpredictable, and uncontrollable outcome, potential risk is a consequence of actions taken in spite of uncertainty.

7.3.13. Risk Control Measures

Risk Control Measures are developed to maintain and/or modify the risk.

Preventative control measures intend to change the likelihood, mitigation control measures intend to change the consequence. Risk Control Measures frequently referred as barriers or safeguards.

7.3.14. Residual Risk

Risk remaining after risk treatment. Residual risk can contain unidentified risk.

7.3.15. Risk Tolerance Criteria

Reference against a risk is evaluated. A predetermined levels of risk used to support decisions about whether further efforts are needed to reduce risk. It shall be determined before risk assessment.

Risk Tolerance Criteria can be described by a Risk Matrix (Consequence/Probability Matrix) as a qualitative risk assessment tool. Risk levels are determined and decision rules assigned to them. Risk Matrix is frequently called as risk assessment matrix, heat matrix or heat map.

7.3.16. Risk Tolerance

Stakeholder's readiness to bear the risk after risk treatment to achieve its objectives.

7.3.17. Risk Management

The ongoing implementation of existing control measures, and identification and implementation where practicable of additional control measures to manage risk to levels that are tolerable and As Low as Reasonably Practicable (ALARP).

Risk Management is an integral part of the D&WO Safety Management System (SMS).

7.3.18. Risk Assessment

A formal process to assess the likelihood and consequences associated with identified risks to determine the level of risk and evaluate the tolerability of the potential risk and residual risk. Risk Assessments are an integral part of Risk Management. Risk assessments have three key sequential steps: Risk Identification, Risk Analysis, and Risk Evaluation.

7.3.19. Risk Matrix

A Qualitative Risk Assessment technique used to rank risks, based on the level of risks. A Risk Matrix is the reference against the risk being evaluated and developed as a risk tolerance criteria.

7.3.20. As Low as Reasonably Practicable (ALARP)

Balance the level of residual risk with the amount of effort, time and money required to reduce the potential risk.

Efforts to reduce risk should be continued until the incremental sacrifice (in terms of time, effort, cost, or other expenditure of resources) is grossly disproportionate to the value of the incremental risk reduction achieved.

7.3.21. Stakeholder

Person or organization that can affect, be affected by, or perceive themselves to be affected by risk, decision, or activity.

7.3.22. Risk Management Process

The core process of Risk Management involves identifying risks, systematically assessing, and implementing risk treatment plan throughout an asset's life cycle. Potential Risks and residual risks shall be documented, communicated, monitored, and measured.

7.4. Responsibilities

The following are the responsibilities in the implementation of this manual:

7.4.1. Managers

Shall provide adequate resources required for the implementation of Risk Management to ensure that the Risk Management Policy is complied with. They shall take overall responsibility for the implementation of this manual for their respective departments, and ensure that Risk Management decisions are made at the appropriate

7.4.2. Management level

7.4.2.1. Engineering – General Supervisors/Supervisors

Verify that all risks within technical/engineering designs are identified and adequate controls are in place.

7.4.2.2. Operations - Superintendents

Verify that all risks within operations activities in their respective divisions are identified, assessed, communicated, and adequate controls in place at the planning stage, prior to the approval of work to be performed, and during the execution of well programs. Ensure that the controls identified are implemented.

7.4.2.3. Operations - Rig Foremen/Liaison man/and other D&WO Key personnel

Implement the Risk Management policy on site and have the required controls in place prior to and during the execution of well programs including Rig moves.

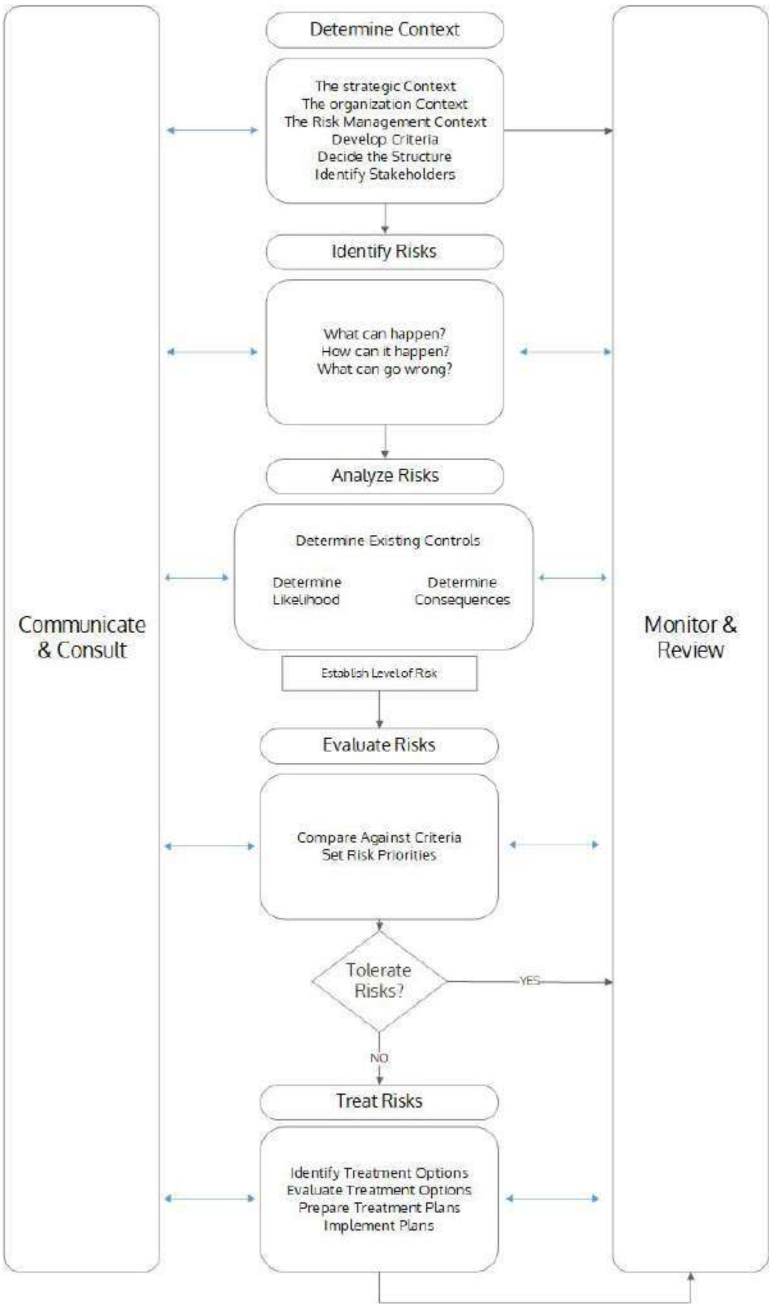
7.4.2.4. Department Safety Advisors / Field safety engineers

Verify that the controls identified are implemented. They shall also provide advisory role and support for the Risk Assessment and Management including the role of risk assessor.

7.4.2.5. Drilling Contractors and Service Companies

Contractors and service companies shall implement the controls identified by D&WO Operations. In addition, they shall also have a Risk Management System that meets the D&WO Risk Management Policy.

7.5. Process Flow Diagram



The following are the sequential steps in the Risk Assessment and Management core process, which shall be individually addressed in this manual:

- Determine context and identify Stakeholders.
- Risk Identification (Risk assessment) and Recording.
- Risk Analysis and Evaluation (Risk Assessment).
- Decision-making on Potential Risk tolerance.
- Risk Reduction and Control (Risk treatment).
- Decision-making on Residual Risk tolerance.
- Risk Communication and Documentation.
- Risk Monitoring and Review.

7.5.2.1. Determine Context and Identify Stakeholders

7.5.1. Context of Risk Management

As a preparation for risk management, the following shall be determined as a minimum:

- Scope and Objectives
- Boundaries
- Risk Tolerance Criteria
- Activities subjected for Risk Management
- Parameters of Activities
- Selected Risk Assessment Technique and methodology
- Stage of the Asset Lifecycle
- Resources

7.5.1.1. Identify Stakeholders

Identify persons or organizations that can affect, or be affected by risk, decision, or activity.

7.5.1.2. Risk Assessment Team

A multidisciplinary team comprised of representatives from all stakeholders. Team members require in-depth knowledge and experience about the subject operations and activities. Risk assessment is a teamwork exercise.

Note:

Risks shall not be assessed by an individual.

7.5.2. Risk Identification and Recording

7.5.2.1. Risk Identification

Risks shall be identified through a series of simple questioning of the activity to be carried out. It shall seek to answer the following questions:

- What can happen, where and when?
  - Identify risk sources, hazards, consequences, changes which may have adverse effect.
- Why and how can it happen?
  - Identify events, conditions, or circumstances.
- What can go wrong?
  - Identify causes, mistakes, and failures.
- Is there any potential deviation from expected?
  - What tools and techniques can be used to assist detection?

7.5.3. Risk Recording

7.5.3.1. Risk description

Record the risk description. Risk description is a structured statement of risk usually containing four elements: Risk source, Event, Cause, and Consequence.

Example:

Drilling crew remain in hazardous area if the evacuation bus cannot reach the safe staging area #1 during evacuation, due to the designated evacuation road blocked by road construction work.

- Drilling crew remain in hazardous area (consequence)
- If the evacuation bus cannot reach the safe staging area #1 (risk source)
- During evacuation (event)
- Due to the designated evacuation road blocked (cause) by road construction work.

7.5.3.2. Risk Register

Risks and/or new risks identified in drilling and workover operations shall be recorded in a Risk Register, which shall be updated continuously, and shall be maintained by the D&WO Operational Departments and D&WO Engineering Departments.

7.5.4. Risk Analysis and evaluation

7.5.4.1. Risk Analysis

Analyze the likelihood and potential consequences of each risk by using scales or ranking (qualitative or quantitative). Determine the level of each potential risk.

7.5.4.2. Risk evaluation

Prioritize (rank) all analyzed risk associated with the project or activity according to the potential risk levels.

7.5.5. Decision making on Potential Risk tolerance

Evaluate the risk level against the risk tolerance criteria. Decision shall be made on all assessed risk, as to whether the potential risk level is tolerable. If the Potential Risk is at intolerable level, it shall be treated by identifying and implement existing and additional control measures, to reduce the level of risk As Low as Reasonably Practicable (ALARP).

7.5.5.1. Risk Reduction and Control (Risk treatment).

This is the step where measures are taken to eliminate, reduce, tolerate, or avoid the risk analyzed to control the undesirable effects of the risk or hazard.

7.6. Risk Control Techniques

Risk Control techniques include the following:

7.6.1. Terminate:

Preventative control measures are established and implemented to eliminate the risk by removing the source of risk.

7.6.2. Treated

Control measures are implemented to reduce the risk As Low as Reasonably Practicable. Effective implementation of control measures can change the likelihood or change the consequences of the risk.

7.6.3. Tolerated

The risk is determined to be tolerable.

7.6.4. Transferred

The risk is toured to others or avoided.

7.7. Risk Control Measures

Controls include, but are not limited to, any process, policy, device, practice or other conditions and/or actions which maintain and/or modify risk.

The following measures are used for controlling specific risks and shown in preferred order:

7.7.1. Engineering Controls

Risks are avoided, eliminated or reduced through appropriate engineering design. Various engineering standards are in place to address designs and implementation with minimum required standards for controlling risks.

7.7.1.1. Administrative controls

These controls include administrative procedures, location and proximity, education, work assignments, substitutions, breaks, and personnel rotations.

7.7.1.2. Personal protective controls

These are additional or supplemental interim measures to complement engineering and administrative controls

7.7.1.3. Risk treatment plan

The treatment plan relating to each risk shall be summarized in a Risk Assessment Form

7.7.1.4. Existing, current control measures

Record all existing preventative control and mitigation measures and refer to Standard, Policies, Administrative Controls (SPAC) or Procedures where the expected performance of the control measures are determined. Identify and record stakeholders who are responsible for the effective implementation of each existing control measure.

7.7.1.5. Additional control measures

Once an additional control measure is identified, it shall be described as developed S.M.A.R.T.E.R matrix where the responsible stakeholder and the expected performance of the implementation is clearly defined.

7.7.1.6. Decision making on Residual Risk tolerance

With consideration of the existing and the additional control measures effectiveness, re-analyze and evaluate the level of risk. Decision shall be made on all Residual Risk, whether the residual risk level is tolerable with consideration of the existing and the implementation of additionally identified control measures effectiveness and continuous improvement. It shall be monitored during the execution of the risk associated project or activity. Risk tolerance and continuation or commencement of the risk associated project or activity shall be approved by the appropriate level of executive management according to the level of Residual Risk.

7.8. Risk Communication

The result of risk assessment and the risk treatment plan shall be communicated by the approving party to all stakeholders, parties responsible or affected by the implementation.

A key factor to the success of any Risk Management activity is risk communication.

Risk Management is an ongoing process that involves three significant topics that must be communicated in various ways:

- Assessing the risk.
- Treating the risk.

- Monitoring the risk.

A structured communication process is required so that an informed decision about risk treatment can be made. A proper risk communication will support Risk Management implementation and enhance staff general awareness and Risk Management, recognition and understanding of the Risk Management approach and a positive risk-awareness culture at all levels.

Risk communication can be done in the following ways

- Structured meetings.
- Teleconferencing.
- Detailed written program/instructions.
- Distributed Risk Management Report

7.9. Risk Documentation

The various risk management done to assess risk prior the execution of an activity shall be well documented. D&WO Operational related Risk Assessment and treatment plan usually recorded and documented in the D&WO Risk Assessment Form (RAF) and attached to the well file.

Risk Management of a project is documented in a formal "Risk management" report within which the members (stakeholders) of the risk assessment team shall be identified. These reports shall be included in the well file for D&WO operations and in the central projects database for other operations.

Risk Management Report shall include:

- Objectives and Scope
- Stakeholders and Risk Assessment Team members
- Description of selected Risk Assessment Technique & Methodology
- Risk Tolerance Criteria
- List of Activities
- Limitations and Assumption List
- Data, their sources and validation
- List of uncertainties
- Risk Assessment and Treatment Plan
- Conclusions and Recommendations
- References

7.9.1. Reviewing cycle

Report shall be reviewed by all stakeholders.

7.9.2. Approval cycle according to risk tolerance criteria

- Report shall be approved by executive management according to the highest level of residual risks.
- For D&WO qualitative risk management if the highest level of residual risk evaluated as low (tolerable) it does not need to submit for approval. Effectiveness of implemented control measures shall be maintained and managed for continuous improvement at field level.
- If the highest level of residual risk evaluated as medium (highlighted as yellow) the decision on risk tolerance shall be made by D&WO Superintendent.
- If the highest level of residual risk evaluated as high (highlighted as red) the decision on risk tolerance shall be made by D&WO Department Manager. Continuation or commencement of the high residual risk associated project or activity shall be approved by D&WO Department Manager or subject the risk for further detailed analysis (e.g., QRA) based on the recommendation of the Risk Assessment Team.
- There shall also be a risk register which shall be maintained and updated regularly with feedback from projects, incident investigations, accident/incident reports, etc. Updated risk registers of stakeholders provide input information for future risk identification.
- In the course of implementing a risk assessed project, there could be some planned activities

which if carried out as designed may reveal new risk which was not initially identified. Newly identified risks shall be managed, and the risk register shall be updated, and it shall be communicated through the D&WO organization as lessons learned by issuing an HSE/ Operational Alert.

7.10. Risk Monitoring and Review

7.10.1. Risk Monitoring

Risk Monitoring includes continual checking, supervising, observing or determining the required or expected status, effectiveness and performance level of control measures. The observations during implementation combined with the documentation and communication process will help in achieving the following:

- Facilitate continuous effectiveness monitoring of control measures, therefore the monitoring of residual risk level.
- Maintain the residual risk level as low as possible.
- Obtaining further information to improve risk management.
- To share and communicate Risk Management activities among all stakeholders, most particularly with the field personnel who will be executing risk managed projects.

7.10.2. Review

Overall Risk Management Process of the project shall be reviewed based on the following to ensure continual improvement.

- Significant change in operational process, procedure, operational condition, design intent of equipment, tools, material, existing safeguards and barriers.
- Unplanned arising conditions.
- Based on the recommendation or finding from any conducted Audit.
- Based on the corrective action of incident.
- If it is initiated by a stakeholder.
- If the Risk Tolerance Criteria of Risk Assessment changed.

7.11. Risk assessment technique

7.11.1. Risk Assessment Matrix (Consequence/Probability Matrix)

The “Risk Assessment Matrix” quantitative /semi quantitative risk assessment technique shall be used as the main technique to assess risks for Drilling and Workover operations. The Risk Assessment Matrix is a tool used to determine qualitatively the ranking of a risk, based on the consequence (its harm to people, damage to equipment, property, and impact on environment or interruption of operation) and its probability or likelihood of occurrence as well as how frequently it could occur. The proper use of the Risk Assessment Matrix is covered in the Risk Management Training Package.

The RAF is used to document the risks associated with a particular project or activity, the threats (causes) that could result in a release of the hazard or risk source, the potential consequences, the potential risk associated with the hazard or risk source, the control measures that are or will be put in place and the residual risk taking into account the effectiveness of these measures.

The RAF shall prioritize (rank) all risk associated with a project or activity, and shall be used primarily during the project or process planning stage.

Many risk events may have a range of consequences with different associated likelihood (e.g., fatality as consequence of event is always less likely than a first aid injury). Usually minor/low consequences are more common than catastrophes. Therefore there is a choice as whether to rank the most common consequence or the most serious or as a combination of these. In many cases, it is appropriate to focus on the worst credible consequences as these pose the largest threat and the most concerned. In some cases it may be appropriate to rank both common, minor/low consequence, and unlikely catastrophic consequence events, as separate risks.

It is important that the likelihood relevant to the selected consequence is used and not the probability of the event as a whole. Decision making guidelines are also included in the Risk Assessment Matrix for Potential and Residual Risks.

7.11.2. Risk Matrix Form

	Consequence / Severity				Probability / Likelihood				
	People	Assets	Environment	Reputation	A Never Heard of in industry	B Heard of in industry	C Incident has occurred in our company	D Happens several times per year in company	E Happens several times per year in a location
0	No injury	No damage	No effect	No Impact	• Monitor and review regularly • Manage for continuous improvement				
1	Slight injury	Slight damage	Slight effect	Slight impact					
2	Minor injury	Minor damage	Minor effect	Minor impact					
3	Major injury	Localized damage	Localize effect	Considerable impact					
4	Perm-Disability –One Fatality	Major damage	Major effect	National impact		Measures and demonstrate ALARP		• Stop the activity • Investigate alternatives	
5	Multiple fatality	Extensive damage	Massive effect	International impact					

7.12. Risk Assessment form

Risk Assessment Form

Rig/Unit:		Date of Issuance:	

Severity (S)	Consequances / Severity				Probability / Likelihood (L)				
	People (P)	Assets (A)	Environment (E)	Reputation (R)	A Never Heard in industry	B Heard in industry	C Incident has occurred in our company	D Happens several times per year in company	E Happens several times per year in a location
0	No injury	No Damage	No effect	No impact					
1	Slight injury	Slight Damage	Slight effect	Slight impact					
2	Minor Injury	Minor Damage	Minor effect	Minor impact					
3	Major injury	Localized damage	Localized effect	Considerable impact					
4	Permanent Disability - One Fatality	Major Damage	Major effect	National impact					
5	Multiple fatality	extensive damage	Massive effect	international impact					

No.	keyword / Activity	Hazard	Consequences	Gross Risk Evaluation			Control measures	Residual Risk Evaluation			Responsibility
				S	L	Risk Rating= S*L		S	L	Risk Rating= S*L	
	Activity / process / subprocess	List all potential hazards that can be generated while execution of unit activity	How the persons might be harmed and what is the type of injury, what environmental damage can be done, what plant or equipment damage might result, how much loss of time can be suffered			risk evaluation without any controls	Put required controls and barriers that may reduce or mitigate the potential risk to an acceptable level			risk evaluation after adding controls	Define who is responsible to implement the controls

Risk assessment team		
Name	Position	Signature

7.12.1. People

	Potential impact	Definition
0	No impact	No injury or damage to health.
1	Slight impact	Slight injury or health effects (including first aid case and medical treatment or occupational illness), not affecting work performance or causing disability.
2	Minor impact	Minor injury or health effects (lost time injury); affecting work performance, such as restriction of activities (restricted work case or occupational illness), or a need to take a few days off to fully recover (lost workday case).
3	Considerable impact	Major injury or health effects; (including permanent partial disability and occupational illness) affecting work performance in the longer term, such as a prolonged absence from work.
4	National impact	Permanent total disability or one fatality; from an accident or occupational illness; agents which are capable of irreversible damage with serious disability or death, (e.g. corrosives, heat stroke, cancer (small exposed population).
5	Regional - International impact	Multiple fatalities from an accident or occupational illness (e.g. chemical asphyxiation or cancer (large exposed population); may include four fatalities in close succession due to the incident, or multiple fatalities (four or more) each at different points and/or with different activities.

7.12.2. Assest

	Potential impact	Definition
0	No impact	No disruption to the process. Maximum cost of repair below $10,000.
1	Slight impact	Possible brief disruption to the process. Isolation of equipment for repair. Estimated cost below $ 50, 000. Plant party is down, the process can be restarted. Estimated cost of repair below $100,000.
2	Minor impact	Partial loss of plant shut down (for at most 2 weeks and/or estimated cost of repair below $ 500, 000.
3	Considerable impact	Total loss of plant, extensive damage. Estimated cost of repair exceeding $500,000.
4	National impact	No disruption to the process. Maximum cost of repair below $10,000.
5	Regional - International impact	Possible brief disruption to the process. Isolation of equipment for repair. Estimated cost below $ 50, 000. The plant party is down, the process can be restarted. Estimated cost of repair below $100,000.

7.12.3. Environment

	Potential impact	Definition
0	No impact	No financial consequences. No environmental risk.
1	Slight impact	Negligible financial consequences. Local environmental damage within the fence and systems.
2	Minor impact	Limited contamination. Single exceedance of statutory or prescribed criteria. Single complaint. No permanent effect on the environment.
3	Considerable impact	Limited discharge of known toxicity. Repeated exceedance of statutory or prescribed limit. Damage sufficiently large to affect the environment.
4	National impact	Severe environmental damage. Extensive measures are required to restore the contaminated environment to its original state. Extended exceedance of statutory or prescribed limits.
5	Regional - International impact	Massive Effect Persistent severe environmental damage or severe

7.12.4. Reputation

	Potential impact	Definition
0	No impact	No public awareness.
1	Slight impact	Public awareness of the incident may exist.
2	Minor impact	Some local public concern. Some complaints were received. Slight media and/or local potential attention with potentially negative aspects for operations.
3	Considerable impact	Regional public concern. Numerous complaints. Extensive negative attention in local media. Slight national media and/or local/regional/national policies with potentially restrictive measures and/or impact on the grant of licenses. Mobilization of action groups.
4	National impact	National public concern. Continuing complaints. Extensive negative attention in the national media and/or regional/national policies with potentially restrictive measures and/or impact on grant of licenses. Mobilization of action groups.
5	Regional - International impact	Regional International impact. Regional - international public attention. Extensive negative attention in regional international media and national/ international politics. Potential to harm access to new areas, grants of licenses, and/or tax legislation. Concerted pressure by action groups. Adverse effects on EGPC's operations in other countries.

B8. CONFINED SPACE

EGPC

8.1. Scope

During drilling and workover (D&WO) activities, the D&WO contractor or service companies and subcontractors shall implement a Confine Space Entry program in line, as a minimum, with the instructions described in this section to ensure safe execution of D&WO.

8.2. Purpose

The purpose of this Drilling and Workover (D&WO) confined space Entry procedure is to protect personnel while working in Confined Spaces.

8.3. Responsibilities

8.3.1. Supervisor or Competent Designate

- Conduct a Hazard Assessment.
- Determine the type of personnel protective equipment (PPE) required.
- Prepare a Confined Space Rescue Plan.
- Must ensure the workers are trained in confined space entry and the safe use of all the personnel protection equipment prior to entering any confined space.
- Ensure all atmospheric tests are completed by a competent person and logged before personnel enter a confined space.

8.3.2. Worker

- Be trained in confined space entry.
- Know the procedures for confined space entry.
- Ensure all atmospheric tests are completed by a competent person and logged before personnel enter a confined space.
- Ensure all atmospheric tests are completed by a competent person and logged before personnel enter a confined space after the area has been unoccupied for extended periods of time, such as tea and meal breaks.
- Ensure all safety precautions are in place before entering a confined space.
- Ensure understanding the procedure for rescue.

8.3.3. Stand-by Person

- remain on the outside of, and near, the confined space
- capable of being in continuous communication with and, if practicable, to observe those inside,
- Initiate rescue procedures and operate equipment used for entry to the confined space, where necessary.

8.4. Definitions

8.4.1. Competent Person

A person who has effectively proved the ability to solve or address problems relating to the subject matter at work by holding a recognized relevant degree or certificate of professional standing, or by considerable knowledge, training, and experience.

8.4.2. Confined Space

8.4.2.1. A space or volume which

- Is not intended as a regular workplace.
- Has restricted means of entry and exit.
- May have inadequate ventilation and/or an atmosphere, which is either contaminated or oxygen-deficient.
- Is at atmospheric pressure during occupancy.

8.4.2.2. Confined spaces include, but are not limited to:

- Storage tanks, spud cans, pre-load tanks, mud pits (land rigs),trip tanks, voids, process vessels, boilers, pressure vessels, batch mix tanks and other tank-like compartments.
- Open-topped spaces of more than 1.2 meters in depth, such as rotary opening when the bell nipple is installed, and pits which are not subject to good natural ventilation.
- Pipes, sewers, shafts, ducts, and similar structures.
- Any shipboard spaces entered through a small hatchway or access point, cargo tanks, cellular double bottom tanks, duct keels, cofferdams, ballast and oil tanks, and void spaces, but not including dry cargo holds.

8.4.3. Contaminant

Any dust, fume, mist, vapor, gas (H2S) or other substance, the presence of which can be harmful to health.

8.4.4. Exposure Standard

An airborne concentration of a particular substance in the workers breathing zone, exposure to which, according to current knowledge, should not cause adverse health effects, nor cause undue discomfort to nearly all workers.

The exposure standard can be of three (3) forms:

8.4.5. Time Weighted Average (TWA)

The average airborne concentration of a particular substance when calculated over a normal eight (8) hour workday, for a five (5) day working week.

8.4.6. Short-Term Exposure Limit (STEL)

A fifteen (15) minute TWA exposure, should not be exceeded at any time during a working day, even if the eight (8) hour TWA average is within the TWA exposure standard. Exposure at the STEL should not be longer than fifteen (15) minutes, and should not be repeated more than four (4) times per day. There should be at least sixty (60) minutes between successive exposures at the STEL.

8.4.7. Peak

A maximum or peak airborne concentration of a particular substance determined over the shortest analytically practicable period, which does not exceed fifteen (15) minutes.

8.4.8. Explosive (Flammable) Range

The range of flammable contaminant/air mixture between the Lower Explosive Limit (LEL) and the Upper Explosive Limit (UEL).

8.4.9. Hot Work

Welding, thermal or oxygen cutting, heating, and other ignition-producing or spark-producing operations.

Note:

Hot work is not permitted if the atmosphere is above 0% LEL.

8.4.10. Lower Explosive Limit (LEL)

Concerning a flammable contaminant, this is the concentration of the contaminant in air, below which the spread of a flame does not occur in contact with an ignition source.

8.4.11. Sufficient Oxygen

Before entry, verify that the O2 level is between 20% and 23.5%. If the O2 level is less than 20%, entry is permitted only while continuously wearing an atmosphere-supplying respirator. If the O2 level is above 23.5%, no entry is permitted.

8.5. Risk assessment

8.5.1. Major hazards of CSE

Fatalities or severe injuries could occur as a result of the following:

- Oxygen deficiency in the confined space.
- Temperature - either too hot or too cold, which can result from the work process or the weather conditions, or where appropriate ventilation or appropriate clothing is not supplied or worn.
- Radiation - within a confined space caused by the use of X-rays, radiation gauges, isotopes, lasers, and welders.
- Manual handling

8.6. Monitoring

8.6.1. Before Entry

The evaluation of the atmosphere and a survey of other hazards should be performed outside the confined space before any entry occurs (the results should be recorded on the entry permit).

The supervisor shall ensure that no person enters a confined space without a work permit until the following tasks have been carried out:

Confine Space Entry	Oxygen (0_2)	Flammable/Combustible Mixtures	Carbon Monoxide (CO)	Hydrogen Sulfide (H_2S)
Permitted without an atmosphere-supplying respirator	At or above 20% and less than or equal to 23.5%	Less than 5%	Less than 35 ppm	Less than 10 ppm
Permitted ONLY while continuously wearing an atmosphere-supplying	less than 20%	At or above 5% and less than 10%	At or above 35 ppm and less than 1000 ppm	At or above 10 ppm and less than 100 ppm
No entry permitted	above 23.5%	At or above 10%	At or above 1000 ppm	At or above 100 ppm

Consistent with the hazards identified in the risk assessment and ensure actions are taken according to the levels of the atmosphere test, as per the following table:

8.6.2. Gas Detectors

A thorough knowledge of the gas indicators is required and should include the following:

- Properties of the gas/vapor.
- Humidity and temperature in the space.
  - Never trust your senses to determine if the air in a confined space is safe! You cannot see or smell any toxic gases and vapors, nor can you determine the level of oxygen present.
- Presence of airborne contaminants that may reduce the accuracy of the reading or “poison” the sensor.
- The presence of corrosive gases and mists, which may damage the sensor and give misleading results, causes a false zero reading.

- Calibration, adjustment, and maintenance requirements.
- Need for recalibration during testing.
- Condensation and/or absorption of gas into walls of sampling lines where these are used.
- Response of the instrument to high and low concentrations of flammable gas or vapors (for example, false zeros).
- Oxygen deficiency causing an erroneously low reading.
- Oxygen enrichment where the instrument may act as an ignition source causing explosion.
- Difference in atmospheric pressure, which may cause false readings in some sensors. Equipment for continuous monitoring of gases and vapors should be intrinsically safe and equipped with an audible alarm if danger develops. Instruments should be calibrated per the manufacturer's guidelines. If an acceptable result cannot be obtained without continuous forced draft ventilation, then the ventilation device should be suitably tagged to ensure it is not disconnected while the inspection or other work is in progress. The standby person is responsible for monitoring the proper operation of the forced draft ventilation device.

8.6.3. During Entry

Because of the potential for the latter release of hazardous material, arrangements should be made to monitor or re-test the atmosphere within the confined space. The use of continuous monitors, which have alarms, is the most conservative approach.

8.7. Control

8.7.1. Hierarchy of Control Measures, the control measures should consist of:

- Elimination.
- Substitution.
- Engineering controls.
- Adoption of safe work practices.
- Use of personal protective equipment.

8.7.2. Isolation Requirements

Before any employee enters a confined space, the employer shall ensure that all potentially hazardous services, including all process services, normally connected to that space are positively isolated to prevent:

The introduction of any materials, contaminants, agents, or conditions harmful to people occupying the confined space; and It may be necessary to withdraw a confined space from service before it is prepared for entry and that all persons who may be involved with the repair, maintenance or operation of the confined space are advised.

Positive steps should be taken to achieve the following:

- Prevention of accidental introduction into the confined space of materials, through piping, ducts, vents, drains, conveyors, service pipes, or fire protection equipment.
- De-energization and Lock-Out/Tag-Out (LOTO) de-energization and tag-out or both of machinery, mixers, agitators, or other equipment containing moving parts in the confined space.
- Isolation of all other energy sources that may be external to, but still capable of adversely affecting the confined space, for example, heating and/or refrigeration methods.

8.7.3. Methods of Isolation

8.7.3.1. Hazardous Materials

No personnel shall be allowed to enter a confined space until positive means are established to prevent all energy sources from entering the confined space area or causing associated equipment to operate while work continues.

All isolations shall be conducted under the PTW and LOTO Procedure. Listed below are three (3) methods of isolation. Alternative methods may be used if equivalent security can be achieved.

- Removal of a valve, spool piece, and expansion joint in piping leading to, and as close as possible to, the confined space and blanking or capping the open end of the piping leading to the confined space. The cap or blank should be identified to indicate its purpose.
- Insertion of a suitable full-pressure spade (blank) in piping between the flanges nearest to the confined space. The spade should also be identified.
- Where neither method above is practicable, isolation through closing and locking, or closing and tagging, or both, of at least two valves in the pipe leading to the confined space shall suffice.

Before entry is permitted to any confined space which itself can move, or in which agitators, fans, or other moving parts, which may pose a risk to personnel are present, movement shall be prevented by an approved means or an alternative method offering the equivalent security. Where practicable, equipment or devices with stored energy such as hydraulic, pneumatic, electrical, chemical, mechanical, thermal, or other types of energy should be reduced to zero energy.

- The person entering the confined space or the competent person should place a lock or tag, or both, on the open circuit breaker or open isolating switch supplying electric power to equipment with hazardous moving parts. This will indicate that a person is in a confined space and that such isolation shall not be removed until all persons have left the confined space. When a lock is used, the key shall be kept in the possession of the competent person.
- Where a power source cannot be isolated, controlled readily or effectively, a belt of other mechanical linkage shall be disconnected and tagged to indicate that a person is in the confined space and that the linkage shall not be reconnected until all persons have left the confined space.
- Where the item methods a) and b) above are not practicable, moveable components shall be blocked, and switches, clutches or other controls shall be tagged to indicate that a person is in the confined space. The blocks and tags should not be removed until the person has left the space.
- Where more than one person is in the confined space, the isolating device shall be either:
  - Locked and tagged, or both, by each person entering the confined space.
  - Locked and tagged, or both, by the Competent Person.
  - Where locking or tagging is undertaken by the Competent Person, each person entering the confined space shall verify or have it verified to him/her that isolation is effective prior to his entry.
  - Removal of Isolation: The locks, tags, blanks or other protective systems shall only be removed be the person who installed them or by the Competent Person, after confirming that work has been suspended or completed and all persons have left the confined space. All PTW and Isolation certification shall be closed.

8.7.3.2. Ventilation

There are two main types of ventilation techniques:

- Natural
- Mechanical or forced

Either means of ventilation should be employed while confined space entry is taking place to establish and maintain a safe breathing atmosphere. This ventilation should be continued throughout the period of occupancy as a safeguard against unexpected release of contaminants. It should be noted that for natural ventilation to be effective, there must be two ventilation points, one at low level and one at high level, each must be of similar square area in opening. Mechanical ventilation equipment may not be adequate or sufficiently reliable to maintain a safe atmosphere in the operators breathing zone, particularly during operations likely to generate toxic contaminant.

Where maintenance of a safe breathing atmosphere in a confined space is dependent on mechanical ventilation equipment, for example, a fan, then the equipment should:

- Be continuously monitored while the confined space is occupied.
- Have the controls (including any remote power source) clearly identified and tagged to prevent against unauthorized interference. Exhaust facilities should be arranged to ensure that any

contaminated air removed from the confined space does not present a hazard to persons or equipment. Nor do the emissions from equipment such as petrol or diesel engines enter the confined space. The use of oxygen above concentrations of 21% shall not be used for ventilation.

8.7.3.3. Cleaning Prior to Entry

All substances, which are likely to present a hazard to persons inside the confined space, should be removed as far as possible prior to entry. Potentially dangerous material may be trapped in sludge, scale or other deposits, behind loose linings, in liquid traps, or in instrument fittings, and may be released only when for example, it is disturbed or heat is applied. Similarly, such material may lodge in joints in vessels or in the bends of connecting pipes, or other places where removal is difficult. Procedures and processes to be used to clean the inside of a confined space should be reviewed and authorized prior to entry. The method to be used will depend upon the material in the confined space and the potential hazards that may be created by the cleaning process itself. Contaminants should be disposed of in a manner that will not constitute a hazard.

The following are some general practices to be observed:

- Whenever practicable, initial cleaning should be performed from outside the confined space. Such initial cleaning should continue until the hazard of atmospheric contaminants has been reduced as far as reasonably practicable possible.
- Each person entering the confined space should be provided with:
  - Suitable protective suits
  - Impervious footwear
  - Safety helmet with face shield
  - Protective gloves.
  - Confined Space Safety Harness with D-rings on the top of both shoulder straps.
  - An appropriate respiratory protective device, where necessary.
- Hydro jetting the following general precautions should be observed when hydro jetting is undertaken in a confined space.
  - Hydro jetting should always be carried out by trained personnel.
  - Warning signs indicating that hydro jetting is in progress should be displayed in conspicuous locations outside the confined space.
  - The area affected by the hydro jetting should be barricaded while work is in progress.
  - Where there is a possibility of a flammable environment, the nozzle of the hydro jetting equipment should be earthed to decrease the generation of static electricity.
  - Nozzle operators should have direct visual or audible communication with the pump operators.
  - Removal of fluids from the confined space should be continuous during operation.
  - A high pressure/low pressure volume gun should be used to intermittently clean, rather than operating continuously, thus allowing adequate replacement of air. All high pressure cleaning equipment should be fitted with actuating devices, which require positive effort, by the operator’s hand or foot to keep the supply valve open.
- Abrasive Blasting cleaning by abrasive blasting should only be undertaken where suitable air supplied respirators are used. Further consideration should also be given to:
  - Illumination and visibility adequate to allow safe working to continue.
  - Protection of the breathing airline to the respirator.
  - Escape equipment.
  - Actuating devices, which require positive effort by the operator to keep blasting apparatus, supply valve open.
- Chemical Cleaning In addition to creating toxicity hazards, chemicals used in cleaning operation may also be capable of producing a flammable atmosphere. Accordingly, the safety of the atmosphere should be reevaluated after cleaning and prior to the commencement of further work.

8.7.3.4. Purging Prior to Entry

Care should be taken in the purging of a confined space to preclude rupture or collapse of the enclosure due to pressure differentials. When flammable contaminants are to be purged, purging and ventilation equipment designed for use in hazardous locations should be employed and precautions taken to eliminate all sources of ignition.

Any methods employed in purging should ensure that any contaminants removed from the confined space are exhausted to a location where they present no hazard. Where appropriate, the confined space shall be cleared of contaminants by use of a suitable purging agent. An employer shall ensure that oxygen or gas mixtures are not to be used for purging or ventilation. Where supplied-air-breathing apparatus is not used, precautions should be used to establish and maintain a safe breathing atmosphere.

8.7.3.5. Issue of Permits

The permit/PTW should state the period of its validity and should be replaced whenever it becomes evident that the duration of work will involve one of the following:

- A change in the supervisor.
- A significant break in work continuity.
- A significant change in atmosphere or work.

8.7.3.6. Standby Persons

It is essential that communication and observation between those in the confined space and the standby person(s) be constantly maintained. Communication can be achieved, dependent on the conditions existing in the confined space, by a number of means, including voice, radio hand signals and other appropriate means. Where it is expected that the person entering the confined space and the standby person may change places then authorization shall be required on the permit to do so. The maximum and minimum standby persons should also be recorded on the permit. The supervisor ensures that no person enters the confined space unless standby person(s) outside the confined space are maintained and relieved as required. The supervisor, prior to any person entering the confined space, and during any occupancy of the space, shall ensure appropriate signs and protective barriers are erected to prevent entry of people not involved in the work.

A stand-by man shall be assigned the duty of watching the persons working inside the confined space during the time they are inside.

8.7.3.7. The duties of the stand-by man are:

- He shall have no responsibilities other than to continually watch those inside the confined space and observe their condition and, also, be alert to any need for rescue or other assistance by those inside.
- He shall be in such a position as to physically observe the condition of every person inside the confined space.
- He shall have the means (winching equipment or adequate nearby personnel) to rescue any personnel from inside the space.
- He shall have adequate personal protective equipment available so if it should become necessary to aid those inside the confined space, he can enter the area safely.

8.7.3.8. Rescue and Rescue Equipment

- Method: The removal of trapped, injured or unconscious people from confined spaces is extremely difficult, but invariably involves the use of Rescue line techniques (or Single Line Rescue Techniques - SRT). The use of mechanical lifting equipment should be considered and a Confined Space Entry and Work Tripod is on site before entry to the confined space is permitted. The danger is inherent in these activities. Meticulous attention to detail, knowledge of procedures and high standards of training will minimize risk. Safety standards are not a substitute for foresight, prudence, common sense and experience in the implication of SRT activities.

- Rescue methods and equipment to be used must be determined (and documented) before the commencement of the job.
- Personnel who are suitably trained in rescue and first aid procedures (Rig Medic) and are to be utilized in the event of any emergency.
- Entry and exit points to confined spaces must be of adequate size to permit rescue of all persons who may enter a confined space. These openings are not to be obstructed by fittings or equipment which could impede rescue.
- Standby persons must be equipped with a suitable means of communication.

B9. Housekeeping

EGPC

9.1. Scope

The housekeeping procedure applies to all areas of the organization, including but not limited to offices, rigs, warehouses, etc. It covers all aspects of housekeeping, from cleaning and sanitation to waste disposal and storage.

9.2. Purpose

The purpose of a housekeeping procedure is to establish and maintain a clean, organized, and safe work environment. A well-maintained workplace can help to prevent accidents, injuries, and property damage. It can also improve employee morale and productivity.

9.3. Housekeeping

The following minimum precautions shall be applied and implemented:

- Work areas, stairs, and walkways shall not be obstructed by debris or stored materials.
- All walking and working surfaces shall be kept in good repair and free from oil, mud, and other potentially slippery materials.
- The area around the base of all ladders shall be kept clear to provide unhampered access to the ladder.
- The area around the rotary table shall be kept clear of obstacles, clean, and free of tools, materials, and any accumulation of oil, water, or circulating fluids.
- Storage of material shall not create a hazard. Bags, containers, bundles, super sacks, drill pipes, etc., stored in tiers shall be stacked, blocked, and limited in height so they are stable and secure against sliding or collapse. Pallets and big bags/super sacks shall never be stored more than two high.
- Storage areas shall be kept free from accumulation of materials that constitute hazards, tripping, fire, explosion, or environmental hazard.
- Combustible materials, such as oily rags, waste oil, and other waste, shall be stored in approved covered metal containers and disposed of as hazardous waste.
- The area around the BOP controls shall be clear of materials to allow unobstructed access.
- The area around emergency equipment such as fire extinguishers shall be kept clear at all times.
- Empty sacks and containers, from mixing mud, shall be stacked neatly and disposed of appropriately as soon as mixing is complete. The area around the mixing hoppers shall be kept clear at all times.
- Any and all chemical spills, no matter what chemical or the quantity spilt, shall be cleaned up immediately. Chemical spills shall be cleaned up and disposed of as per the SDS. If the chemical is classified as hazardous, the chemical shall be disposed of appropriately, i.e., hazardous chemical containers.
- Rubbish bins shall be provided around the location. All rubbish bins shall have a cover.
- Emergency escape routes shall be kept clear at all times.
- All permanent trip/collision hazards in emergency escape routes shall be marked with black and yellow diagonal stripes. Where practical, remove permanent trip/collision hazards from walkways.
- Each organization shall develop a regular housekeeping/inspection program and shall document the checklists required for this procedure.

Bio. Respiratory Protection

EGPC

10.1. Scope

The respiratory protection procedure applies to all workers in the organization who are exposed to harmful airborne contaminants.

10.2. Purpose

The purpose of a respiratory protection procedure is to protect workers from exposure to harmful airborne contaminants. This includes dust, fumes, mists, gases, vapors, and smoke. Exposure to these contaminants can cause a variety of health problems, including respiratory illness, cancer, and even death.

10.3. General

The Rig Operator or service company shall ensure that all respiratory protection equipment is provided, well maintained, and used as intended to provide all personnel with adequate protection against all hazardous atmospheres. Those employees required to use this equipment shall be trained in its effective use. This training shall include:

- The need for respiratory protection.
- An explanation of why a particular type of respirator has been selected.
- An explanation of the operation, capabilities, and limitations of the respirator.
- Fitting of face pieces.
- Putting on and taking off of respirators.
- Regulations concerning respirator use.
- Instructions in emergency procedures.
- Maintenance, inspection, and storage of respirators.
- Sealing and functioning of the face piece.

10.4. Maintenance

- Such respiratory protection equipment shall be readily available, maintained in good working order, in a sanitary condition, and inspected on monthly, yearly, and 5-yearly basis as follows:-
- Monthly Inspection: shall be performed by rig safety engineer/barge engineer "Offshore".
- Yearly and 5-year inspection: shall be performed by a 3rd party.

10.4.1. Respirator inspection shall include:

- A check for tightness of connections.
- The condition of the respiratory inlet covering, head harness, valves, connecting tubes, harness assemblies, and hoses.
- The proper function of regulators and alarms.
- Each rubber or other elastomeric part shall be inspected for pliability and signs of deterioration.
- Each air cylinder shall be inspected to ensure that it is fully charged and with a current hydro-test date.
- A record of inspection dates shall be kept for each respirator maintained for Emergency or rescue use.
- Parts Replacement and Repair
- Only technicians certified in the proper respirator maintenance and overhaul shall do replacement of parts and repair.
- Replacement parts shall be only those designated for the specific respirator.

10.5. All Self Contained Breathing Apparatus (SCBA)

- Compliant 15-Min and 30-Min SCBA.
- Or hose-line work masks, including an emergency escape cylinder.

Unless protected by respiratory protection equipment, no personnel shall be allowed to enter any area

Where the oxygen content of the atmosphere is less than 20% by volume an atmosphere-supplying respirator is required.

Or where the atmosphere is contaminated or in danger of being contaminated by any airborne substance that may be considered to be harmful.

10.5.1. Quantity

On all D&WO rigs operating in known H2S areas, or on any rig drilling a wildcat well, there shall be on each rig at least the minimum amount of respiratory protection equipment, required in the drilling/workover contract.

Respiratory protection equipment is or may be required to be worn in areas, which are or may be contaminated with substances immediately dangerous to life or health. The user shall follow the OEM usage instructions, guidance, and limitations.

10.6. Standard Safety Equipment for H2S Operations

H2S and Combustible Gas Monitors. All personnel shall be informed by the Rig Operator of the specific well site hazards linked to Hydrogen Sulphide (H2S) and shall receive specific instruction and demonstrate competency in the correct use of any personal safety equipment, H2S detectors, and warning systems associated with the Rig Operator's H2S Safety Program Procedures.

10.6.1. Integrated Combustible Gas and Hydrogen Sulfide (H2S) Detection and Alarm System

An integrated Combustible Gas and H2S Detection System with separate and distinct Visual and Audible Alarms shall be installed on all well site locations with known or suspected H2S Hazards. This integrated Combustible Gas and H2S Detection System shall be continuously supplied with both rig electric power and an emergency battery power back-up source sized for a minimum of sixty (60) minutes of full operation.

A structured Preventive Maintenance (PM) and testing program shall be developed and diligently implemented to ensure continuous calibration and operation. PM and Testing program shall include following activities and must be documented when performed.

- Contractors and Service Companies shall ensure that Gas Detection Systems (fixed, portable and air breathing compressors) are serviced and calibrated by an OEM authorized Companies and personnel.
- Gas and H2S Detection System shall be calibrated and tested after dismantling during rig move and on an annually basis.
- Weekly visual inspection for the splash guard to ensure the sensor provides accurate readings.
- Inspect that all sensors have OEM protective housings capable of protecting the sensor from accidental spray from rig wash down hoses and accidental mud and/or oil splashes and replace if signs of damages.
- Inspect during/after severe weather (rain/fog), check the condition of the detection equipment and calibrate the sensors.
- Contractors and Service Companies shall have a detailed fixed sensor calibration procedure provided by the OEM for use/reference during monthly calibrations.
- The sensors shall be located as near as practical to:
  - The top of the bell nipple (H2S & Combustible Gas).
  - The flow line opening to the shale shaker (H2S & Combustible Gas).
  - The Driller's position and about 18-24 inches above the floor (H2S).
  - The cellar, this sensor should be readily moveable so that it can be use around the BOP stack or at the well testing equipment when necessary (H2S & Combustible Gas).
- The H2S alarm system (amber strobe lights and audible alarm) shall be set for a Warning High alarm (visual) maximum at 10 ppm and Critical High - High alarm (visual and audible) maximum at 20 ppm. The alarm system shall be designed and strategically positioned so that at least one visual alarm strobe light is clearly visible to all personnel in any work area. The Audible alarms shall be readily heard by all personnel in any work area and shall be readily heard and inside all living quarters and offices.

Note:

Consideration shall be given to all work areas such as the logging unit and military post, if H2S alarms cannot be clearly heard and seen in these areas, then additional alarms shall be installed.

- There shall be, at a minimum, one spare H2S sensors.

10.6.2. Combustible Gas Detection and Alarm System

- All well sites shall have a continuous combustible gas monitor and alarm system composed of a minimum of two combustible gas detection devices connected to a Warning High alarm (visual - Red Strobe) and a Critical High - High alarm (visual and audible).
- The minimum of two (2) required combustible gas detection devices shall be located as follows:
- Rig Combustible Gas Detection Device Locations:
  - The top of the bell nipple.
  - The flow line opening to the shale shaker.
  - The combustible gas alarm system (red strobe light and audible alarm) shall be set for a Warning High alarm (visual) maximum at 25% LEL (Methane) and Critical High - High alarm (visual and audible) maximum at 40% LEL (Methane).
  - The alarm system shall be designed and strategically positioned so that at least one visual alarm strobe light is clearly visible to all personnel in work areas including living quarters.
- There shall be a minimum of one spare LEL sensor.

10.6.2.1. Note:

- All portable gas monitoring equipment shall be calibrated as per the OEM recommendations, log books with maintenance and calibration records shall be maintained for each gas detector. Each gas detector shall be labeled with: date of last calibration and name of person performing calibration.
- Number of required portable gas detectors shall be determined based on the internal H2S/ Combustible procedures or rig specific emergency response plan.

10.6.3. Required Breathing Apparatus

- All Well site Breathing Apparatus shall be equivalent to the SCBA Units specified in ANSI Z-88.2 with the minimum design features:
  - Open-circuit positive pressure design.
  - Minimum 10/15-Minute Escape Cylinder/Minimum 30-Minute Emergency Operations Cylinder.
  - Integrated OEM Cylinder Quick Fill Connection (Emergency Packs Only 10/15 minutes).
- Minimum 10/15-minute SCBA Escape Units with integrated Cascade BA Manifold Connections and Cylinder Quick Fill Connections shall be provided by Rig Management and positioned as follows:
  - All Rig Site Accommodation Cabins – Escape Only units such as ELSA.
- Minimum 30-minute SCBA Escape Units with integrated Cascade BA Manifold Connections (Example Diaphragm) shall be positioned as follows:

Location (Place)	Required Number
Tool pushers office/quarters	One
Company Foreman's office/quarters	One
Rig Floor	Three
Primary safe briefing area	Two
Secondary safe briefing area	Two

- Each organization shall perform a risk assessment based on the well program to identify the required number of Breathing Apparatuses.
- At least one fully-charged spare cylinder shall be provided for each 30 minute SCBA at each designated Safe Briefing Area.

BII. Hydrogen Sulfide Safety (H_2S)

EGPC

11.1. Scope

The hydrogen sulfide safety procedure applies to all workers who may be exposed to H2S.

11.2. Purpose

This procedure identifies common hazards and possible safety precautions and monitoring methods to ensure the safety of personnel and equipment, to reduce the health effects to workers who are exposed to hydrogen sulfide by breathing it depending on concentration and exposure duration.

11.3. Definitions

11.3.1. Hydrogen Sulphide

Chemical formula is H2S. It is a flammable, colorless, toxic gas that is heavier than air and sometimes associated with oil and gas producing and gas processing operations.

11.3.2. Time-weighted average (TWA)

is a method of calculating a worker's daily exposure to hazardous substances such as dust, fumes, chemicals, gases, or vapors. It is averaged to an 8-hour workday or 40-hour week, along with the average levels of exposure to the hazardous substance and the time spent in that area. TWA for H2S is 10 PPM.

11.3.3. Short term exposure limit (STEL)

A 15 minute TWA exposure that should not be exceeded at any time during a workday. STEL for H2S is 15 PPM.

11.4. Responsibilities

11.4.1. PIC (OIM/STP)

- Shall ensure that all personnel follows the rules outlined in this procedure.
- Ensure that all required inspections for the H2S equipment are properly done as per required.

11.4.2. Senior Electrician

Shall ensure that the H2S detectors and equipment are maintained, calibrated and ready to use at any time as per PMS.

11.4.3. Rig Engineer/ Senior Mechanic/Barge Engineer

- Ensure that all air lines and cascade system (If applicable) are in good conditions and working properly.
- Shall be responsible for re-filling the BA cylinders after usage.

11.4.4. Safety Engineer

- Shall ensure all personnel are adequately trained in the basic fundamentals of Hydrogen Sulphide (H2S) safety.
- Shall ensure that all personnel are trained in the using of H2S gas detectors and donning the SCBA.
- Shall ensure that all personnel are aware of the H2S Emergency situation by following the organization H2S drills matrix.

11.4.5. All other employees

Each Individual should follow organization Rigs specific station bill

11.5. Procedure:

It is not acceptable to proceed with work in a new area (where there is any reason to believe H2S could be present) without provision of at least a minimum of H2S safety equipment. Minimum, means detectors, measuring equipment and standby Self Contained Breathing Apparatus in the field available to use for sampling and other activities where there is a potential exposure to H2S until such time as H2S presence and quantity is accurately determined.

11.5.1. Facts and Hazards of Hydrogen Sulphide:

H2S is a highly toxic, colorless gas, heavier than air. It can paralyze the breathing system and KILL in minutes. Being heavier than air, on still days H2S tends to accumulate in low-lying areas. Mud pits are particularly hazardous. However, if the H2S is warmer than the surrounding air, it will rise. Thus even personnel working in high places, such as the derrick-man should do so with caution. H2S is highly soluble in water, and in hydrocarbons such as gasoline, kerosene and crude oil. At atmospheric pressure, water will absorb about three times its own volume of the gas.

H2S can be naturally occurring, can be produced by sulfate-reducing bacteria, and can be generated by reaction of HCL acid and iron-sulfides (sulfide scale) found on the well tubular. H2S occurs worldwide in various concentrations associated with gas, oil and water.

11.5.2. H2S Gas Key Points

- Extremely toxic.
- Colorless.
- Heavier than air.
- Readily disperses by the wind.
- Smells like rotten eggs in small concentrations.
- Highly corrosive to certain materials.
- Burns with a blue flame and produce SO2.
- Ignition temperature 260C.

11.5.3. Health Effects of H2S

Hydrogen sulfide gas causes a wide range of health effects. Workers are primarily exposed to hydrogen sulfide by breathing it. The effects depend on how much hydrogen sulfide you breathe and for how long. Exposure to very high concentrations can quickly lead to death.

Short-term (also called acute) symptoms and effects are shown below:

Concentration (ppm)	Symptoms/Effects
0.00011-0.00033	Typical background concentrations
0.01-1.5	Odor threshold (when rotten egg smell is first noticeable to some). Odor becomes more offensive at 3-5 ppm. Above 30 ppm, odor is described as sweet or sickeningly sweet.
2-5	Prolonged exposure may cause nausea, tearing of the eyes, headaches or loss of sleep. Airway problems (bronchial constriction) in some asthma patients.
20	Possible fatigue, loss of appetite, headache, irritability, poor memory, dizziness.
50-100	Slight conjunctivitis (“gas eye”) and respiratory tract irritation after 1 hour. May cause digestive upset and loss of appetite.
100	Coughing, eye irritation, loss of smell after 2-15 minutes (olfactory fatigue). Altered breathing, drowsiness after 15-30 minutes. Throat irritation after 1 hour. Gradual increase in severity of symptoms over several hours. Death may occur after 48 hours.
100-150	Loss of smell (olfactory fatigue or paralysis).

Concentration (ppm)	Symptoms/Effects
200-300	Marked conjunctivitis and respiratory tract irritation after 1 hour. Pulmonary edema may occur from prolonged exposure.
500-700	Staggering, collapse in 5 minutes. Serious damage to the eyes in 30 minutes. Death after 30-60 minutes.
700-1000	Rapid unconsciousness, "knockdown" or immediate collapse within 1 to 2 breaths, breathing stops, death within minutes.
1000-2000	Nearly instant death

11.5.4. Longer term (also called chronic) symptoms and effects

Some people who breathed in levels of hydrogen sulfide high enough to become unconscious continue to have headaches and poor attention span, memory, and motor function after waking up. Problems with the cardiovascular system have also been reported at exposures above permissible exposure limits. People who have asthma may be more sensitive to hydrogen sulfide exposure. That is, they may have difficulty breathing at levels lower than people without asthma.

11.5.5. First Aid

In a case of emergency, below to be followed:

- Never enter the contaminated area before putting on Breathing Apparatus.
- Remove the victim from the contaminated area into fresh air as soon as possible.
- If breathing has stopped, start artificial respiration immediately.
- Keep the patient warm and at rest.
- Get patient to doctor as soon as possible, but continue artificial respiration en route if breathing stops.
- If an oxygen resuscitator is available, use it instead of artificial respiration, as oxygen will more quickly oxidize H2S in the blood. However, begin with artificial respiration rather than wait for a resuscitator.
- Regarding the AED use:
- Patients who are comatose, hypotensive, or are having seizures or cardiac arrhythmias should be treated according to advanced life support (ALS) protocols which may include AED if needed.

Regarding Eye:

- Do not irrigate frostbitten eyes. Otherwise, irrigate exposed or irritated eyes with plain water or saline for at least 5 minutes.
- Eye irrigation may be carried out simultaneously with other basic care and transport. Remove contact lenses if easily removable without additional trauma to the eye. If a corrosive material is suspected or if pain or injury is evident, continue irrigation while transferring the victim to the support zone.

11.6. Safety Precautions

The following precautions must be taken in order to protect from a possible H2S occurrence safely:

- The Rig Operator and Service Companies shall ensure all personnel are adequately trained in the basic fundamentals of Hydrogen Sulphide (H2S) safety and continuously maintain valid H2S safety Training Certificates. No personnel are permitted to enter any rig/well site location without a valid H2S Safety Training Certificate and completing the rig safety orientation.
- Training shall include all personnel on the rig to be able to demonstrate an understanding of characteristics of H2S and its toxicity and Rig specific detection, warning system, and alarm signals.
- Keep proper breathing apparatus on location, and train all personnel in its operation and maintenance.
- H2S drills should begin prior to drilling into formations thought to contain H2S; so all persons will react immediately at the warning signal. Periodic drills should also be carried

out even if H2S is not anticipated, in order to keep crews familiar with the procedure in case of an unexpected occurrence of H2S. H2S drill to be conducted minimum bi-weekly as per organization contingency manual.

- Portable electronic gas detectors: A hand portable device with a clear audio visual display with alarm that able to determine oxygen content and level of H2S in air. Detectors must have a valid calibration certificate by third party every six months. Personnel shall be trained in their application, proper use and any operational limits that may be applicable. Detectors shall not be used as measuring device.
- Have adequate H2S detection devices in key areas around the rig, with responsibilities for monitoring them clearly defined.
- Ensure that the assigned first aiders in each crew are trained in artificial respiration and other first aid techniques relevant to H2S poisoning.
- Restrict movement of personnel into areas likely to have H2S contamination by adequate warning signs at rig entrance and apply warning announcement.
- Facial Hairs shall be removed for all breathing apparatus to be effective, it is critical to have an effective seal around the face mask. Given that facial hairs may prevent this seal, it is recommended to prohibit facial hairs for personnel working in known H2S areas.
- Enough wind socks shall be distributed

11.7. Detection and Monitoring Hydrogen Sulphide:

The detection and monitoring of Hydrogen Sulphide in the workplace is essential in implementing a personnel safety program. No human sense can be relied on as a means of detecting H2S. This toxic gas is colorless and odorless in concentrations low as 100 ppm by volume. Depending on the individual’s physical makeup, length of exposure, and frequency of previous exposure, the sense of smell may be removed at lower concentration levels. Emphasis on this adverse physical effect is essential, as a false sense of security may arise from the loss of sense of smell.

Distribution of BA shall be as per rig-specific safety layout and station bill.

Rig Site / Equipment	SCBA 30 Min	Escape set 15 Min	Derrick Escape Hood	Single gas detector (H2S)	Single gas detector (O2 , CO, SO2)	Multi -Gas Detector	Fixed gas detection system	Wind socks
Drilling	12	7	2	3	1 for each	2	1	5
W/O	8	4	2	3	1 for each	2	1	4
Offshore	24	20	2	3	1 for each	4	4	6

11.7.1. Fixed detection systems

- Fixed hydrogen sulfide atmospheric monitoring systems used in oil and gas well drilling, servicing and workover operations shall include visual and audible alarm(s), located where the alarm can be seen or heard throughout the work area.
- A fixed system does not in itself provide protection for personnel and is not a substitute for normal entry precautions to a high-risk area, where tests using portable equipment and carrying of breathing apparatus should be part of the procedure for entry.
- The Fixed gas sensors shall be located as near as practical to:
- The top of the bell nipple.
- The flow line opining to the shale shaker.
- The Driller’s position and about 18-24 inches above the floor.
- In the cellar, this sensor should be readily moveable so that it can be used around the BOP stack or at the well testing equipment when necessary.

11.7.2. Portable detectors

- Portable detectors are used for alerting the individual and should be available for designated personnel. They may be used in locations where it is not practical to install fixed systems and can also provide back-up facilities in the event of a fixed system failure.
- These detectors are based on the diffusion characteristics of toxic gases and usually incorporate electrochemical detector which generate an electric current as the toxic gas passes over it. This current is converted into an audible or visual display signal alarms (or both) if a preset gas level is exceeded and provide the ability to have a continuous read-out of the concentration.
- The instrument provided should be continuous and automatic in operation and suitable for use by non-technical worker. In addition the instrument should:
  - Be suitable for use in hazardous areas (mandatory)
  - Be robust in construction
  - Be capable of being easily handed and operated by one person
  - Have an integral power source rechargeable, lasting at least eight hours
  - Have test function capability
  - Be easy to calibrate.
- These portable detectors exist in two types:
  - Multi-gas detector where H_2S is one measured gas among other gases that the device can detect.
  - Personal / Single gas detector which dedicated only for H2S and can be mounted on personnel pocket / coverall.

11.7.3. Testing and calibration:

- All systems and equipment should be tested in accordance with the manufacturer's recommendation and Preventive maintenance system "Every 6 months"
- Because H_2S detection systems are primarily warning device, not only the accuracy should be verified but also the speed of response of the sensor. The functioning of the system-related parts such as visual beacons, audible warning devices, and alike should also be verified at regular intervals and before each period of use.

11.8. Breathing (Respiratory protection) Equipment

11.8.1. Self-Contained Breathing Apparatus (SCBA)

- Self-contained breathing apparatus consists of compressed air cylinder/cylinders carried on the wearer's back. Air is supplied to the full face mask via a flexible hose through a pressure reduction and demand valve.
- The system can be obtained either in the 'demand' or' positive pressure' mode. In the positive pressure mode the possibility of pulling in toxic vapor around the seal of the face mask is minimized. Cylinders of 1200, 1800 and 2400 liters are readily available from the manufacturers.
- The amount of air remaining in the cylinder(s) is easily checked by the wearer by means of a pressure gauge fitted to an extension tube attached to the front harness and by an audible low pressure alarm.
- SCBA sets shall be inspected on monthly, yearly and 5-yearly basis as follows:
- Monthly Inspection: shall be performed by rig safety engineer / barge engineer "Offshore".
- Yearly and 5 years inspection: shall be performed by a 3rd party.

11.8.2. Monthly Inspection Instructions for Breathing Apparatus

- Test and inspect all SCBA, according to Your (Rig's) Location List
- Inspect the condition of diaphragms in breather valves, replace if found Brittle, hard, sticky, deformed etc.
- Inspect all gaskets in high-pressure connections and Replace if required
- Check that pressure in all air bottles including spares is minimum 180 bar, if below, Recharge the bottles.
- If no breathing air compressor is available, send the bottles requiring recharge to your local

Shore Base for recharging.

- Perform a leakage test of the equipment. After the check of the bottle pressure, close bottle valve and watch the pressure gauge for 5 minutes, if the pressure drops, Find and repair the leakage
- When releasing the pressure, check the air whistle for (Return Alarm) or Air Reserve Alarm which should whistle when the pressure drops to 40 bar
- Inspect the overall condition of the face masks, ensure that all equipment Related, are in a safe and good working condition, especially the function of the Membrane in the breather valve, and change as required.
- Check hoses, straps and belts, remedy as required.
- Inspect carrier equipment for condition and cleanliness.
- Report if abnormal conditions are observed in an unscheduled work order report
- Every H_2S Drill Check bottle pressure on all units including spare bottles.

11.8.3. Compressed Airline Breathing Apparatus

- These sets consist of a full face mask attached to either a remote set of cylinders containing compressed air or to a compressor. The face mask is connected to the bank of compressed air cylinders or the compressor via a flexible hose and pressure regulator. The bank of remote cylinders or the compressor should never be left unattended whilst users are connected
- The hose should be of a construction capable of withstanding chemical attack and kinking under pressure. In the case of the compressor it may be necessary to include a filter downstream of the compressor to remove any contaminants. The compressed air hose breathing apparatus with a remote set of cylinders is recommended for use in an H_2S contaminated environment up to a maximum of 2 per cent (20,000 ppm) H_2S.

11.8.4. Cascade Air Breathing System

- This equipment used typically on drilling rigs combines the compressed airline system with the self-contained breathing apparatus by providing with the latter a possibility of connecting into a compressed airline supply.
- The self-contained breathing apparatus set allows the person to leave the hazard area when necessary.

11.8.5. Escape BA Sets

An auxiliary self-contained air supply rated for less than 15 minutes is suitable only for escape or self-rescue use.

11.8.6. Chemical Canister Respirators

- These respirators consist of a full face mask connected to a canister. The canister contains an adsorbent material selected for the specific toxic gas, in this case H_2S, which it removes from the inhaled air'.
- The canister of adsorbent is for one time use only and must be discarded after use, regardless of how short the usage was. While breathing in, a negative pressure is developed inside the face mask and, if a poor face seal exists, H_2S could enter the mask.
- Escape hood is easily deployed in an emergency. When the case is opened, the filter plug automatically releases and the filter moves into operational position so the escape hood can be immediately donned. The self-adjusting internal head harness requires no additional tightening.

11.9. General precautions

- Respirators should be selected on the basis of the hazards to which workers are exposed.
- The user shall be instructed and trained in the proper use of respirators and their limitations.
- Respirators shall be cleaned and disinfected after each use.
- Respirators should be stored in a convenient, clean, and sanitary location.
- Respirators should be inspected during cleaning. Worn or deteriorated parts should be replaced. Respirators for emergency use should be thoroughly inspected at least once a month

and after each use.
- Appropriate surveillance of work area conditions and degree of employee exposure or stress should be maintained.
- Persons should not be assigned to tasks requiring the use of self-contained breathing apparatus (SCBA), unless it has been determined that they are physically able to perform the work and use the equipment.
- Equipment needing repair shall be appropriately tagged and removed from equipment stock until it is suitably repaired or replaced.

11.10. Storage, Inspection and Maintenance

- Personal breathing equipment shall be located so that this equipment is quickly and easily available to essential personnel.
- Additional breathing equipment may be required by site specific contingency plans. When an alternative derrick escape means is not available, an escape-type air pack shall be readily available.
- Breathing equipment shall be maintained and stored in a convenient, clean, and sanitary location.
- All breathing equipment should be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures and damaging chemicals. The breathing equipment should be packed and stored to prevent deformation of the face piece and exhalation valve.
- All breathing equipment shall be checked before and after each use and inspected at least monthly to ensure that it is maintained in satisfactory condition. A record of the monthly inspection results, including dates and findings should be retained for a minimum of 12 months.

B12. Fire prevention/ protection

EGPC

12.1. Scope

This fire prevention and protection procedure outlines the organization's responsibility to prevent fires and explosions and handle fire emergencies.

12.2. Purpose

The purpose is effective planning for a fire protection and prevention safety program to maximize the effectiveness of respective activities/processes and to prevent injuries to people, losses to business, damage to environment which may lead to interruptions of services flow to customers and loss of trust from communities.

12.3. Onshore Rig Fire Fighting Equipment and Operations

- Rig contractor shall complete a Fire Risk Assessment specific for each rig to identify potential fire hazards and appropriated controls to mitigate fire risk including fire prevention, detection and emergency response measures. The Fire Risk Assessment shall be updated when be required and reviewed every year by Rig Contractor.
- On every onshore drilling or workover rig, the Rig Operator shall provide and continuously maintain the fire detection and extinguishing system equipment, along with the firefighting equipment specified in the Drilling/Workover Contract.
- The Rig Operator shall develop and implement a structured rig fire detection and extinguishing equipment maintenance and inspection program, designed to ensure all detection and extinguishing equipment is readily accessible and continuously operable in their designated locations.
- All firefighting equipment shall be inspected monthly as a minimum. Additionally, all fire extinguishers shall have an external visual inspection as stipulated by NFPA 10.
- All rig fire detection and extinguishing equipment maintenance, inspection and testing activities shall be documented in an inspection log.
- Firefighting equipment can only be operated by trained personnel.
- The firefighting water tank must contain a sufficient quantity of water to fight the fire for a minimum of 15 minutes, until more firefighting water trucks arrive at the fire area.

Example:

The business unit must have a firefighting water tank with adequate capacity of 6000 liters, for watering out a fire for 15 minutes, in accordance with NFPA 13, for a 2″ fire nozzle diameter, 150 PSI water pressure, and a 100 m fire hose.

- Fire detection and extinguishing equipment shall not be tampered with or removed for other than for firefighting, training and/or required maintenance servicing. Any fire extinguishers removed from the well site for maintenance and/or recharging shall be replaced during the period they are missing.
- All fire extinguishers shall have an identification signage posted in a visible place. Additionally, all fire extinguishers shall be appropriately mounted so that the top of the extinguisher is 1m above the ground, and provided with an OEM protective cover or cabinet.
- The drilling contractor shall develop written site specific Fire Attack Plans for each of the following areas:
  - Engine compartment or engine skid.
  - PCR room.
  - BOP/Cellar Area
  - Fuel tank storage area(s).
  - Rig site and camp accommodation cabins.
  - Any other area on the rig where a fire may be reasonably thought possible.

As a minimum the fire attack plan shall include the following:

- Identify the primary and secondary Fire Attack Teams that will fight the fire.
- Identify the Fire Team composition, as a minimum this will consist of: Fire Team leader and three additional members. All designated Fire Team Members shall wear compliant firefighting PPE and 30 minute SCBA.

- Identify specific firefighting equipment and procedures to fight a fire in that specific area.
- Identify the maximum allowable response time for the Fire team to assemble and fight the fire.
- Include procedures such as a "T" Card system, to facilitate a rapid and accurate head count or other means to account for all personnel.
- Include rescue procedures for rescuing potentially injured personnel from the fire site or vicinity. The drilling contractor shall provide adequate training to ensure that all personnel are capable of performing their assigned tasks as specified in the fire attack plan.
- The rig crew shall validate the safe and effective implementation of this plan in routine rig fire training exercises and emergency drills at rig site and main camp.

Note:

The drilling contractor shall provide adequate training to ensure that all personnel are capable of safely and effectively performing their assigned tasks as specified in the fire attack plans.

- Kitchen galley hoods and cooking appliances shall be provided with a fixed fire suppression system. The capacity of the system shall be based on a Fire Study from a competent person. Its design, installation and maintenance must follow, as minimum, the OEM recommendations and NFPA standards.
- Fixed fire extinguishing systems for each onshore rig (including water, carbon dioxide, dry powder or foam) shall be kept in good working order, available for immediate use at all times while engaged in drilling operations or in transit and have conspicuously placed operational instructions for each system. Actuation station for the range extinguishing system shall be away from the fire range to activate it safely in case of a fire event.
- A fire blanket is required to be available at the kitchen. The blanket shall be away from the cooking range area, to reach the blanket safely in case of fire.
- All compressed gas and fire extinguisher cylinders shall be hydro tested and inspected according to original equipment manufacturers (OEM) guidelines and specifications. Fire extinguisher cylinders shall be hydro tested at intervals not exceeding those specified in the Supplements 01 and 02 of the G.I. 1781.001-01 and as per industry standard NFPA 10. They may be hydro tested earlier if deemed necessary.
- Manual fire alarm stations at rig site and main camp shall be conspicuously located.
- Fire alarms shall be audible in all areas of the rig, high noise areas shall also be furnished with a visual alarm (strobe lights). All fire doors shall remain closed at all times unless fitted with magnetic locks (or a similar device) which shall automatically release when an alarm is activated.

12.3.1. Hand/Portable Fire Extinguishers

- All fire extinguishers shall be "listed" by an approved testing authority to certify performance.
- The specified CO_2 and Dry Chemical Hand/Portable Fire Extinguishers shall be of the specified manufacturers and models (or preapproved equivalent) and deployed as follows:

Safety Equipment Register		Quantity	
No.	Item Description	Land Rigs	
Fire Fighting Equipment		Drilling	Workover
1	Fixed CO_2 System for SCR / VFD	1	1
2	Kitchen wet chemical System	1	1
3	Diesel Fire Pump (Rig site& Camp site)	2	2
4	Fire Station with Fire Hoses and Nozzles	4	3
5	Fire Hoses - Spare	3	2
6	Fire Nozzles - Spare	2	1
7	Dry Powder Fire Extinguishers - 12 kg.	40	30

Safety Equipment Register		Quantity	
No.	Item Description	Land Rigs	
Fire Fighting Equipment		Drilling	Workover
8	CO_2 Fire Extinguishers - 6 kg.	25	15
9	Wheeled Foam Extinguishers 45 L	4	4
10	Fire Blanket	4	4
11	Firefighting Suits	4	4
12	Firefighting Gloves	4	4
13	Firefighting Helmets	4	4
14	Firefighting Visor	4	4
15	Firefighting Boot	4	4
16	Fire Axe	2	2
17	Smoke Detectors (Camp site& Rig site)	75	45

12.4. Offshore Rig Fire Fighting Equipment and Operations

On every offshore drilling or workover rig, the MODU Operator shall provide and continuously maintain the fire detection and extinguishing equipment, specified in both the applicable Drilling/ Workover Contract and Classification Society Standards, available for immediate use at all times, while engaged in drilling operations or in transit.

The MODU Operator shall develop and implement a structured rig fire detection and extinguishing equipment maintenance and inspection program, designed to ensure all firefighting and rescue equipment is readily accessible and continuously operable in their designated locations. All offshore rig firefighting and extinguishing equipment maintenance, inspection and testing activities shall be documented in an inspection log.

The Drilling Contractor shall notify the Liaisonman if the Fire System is found to have any impairment that may affect the operation of the system. The Liaisonman shall take necessary action and inform the Aviation Department for helideck shut-down considerations.

A compliant firefighting and rescue equipment maintenance, inspection and testing program will have the following elements:

- EFWP System and Fire Water/Foam Monitor System will be Functionally Tested weekly as per IMO requirements.
- Monthly BOP/Well Platform Deluge Water spray System and Helideck DIFFS System Function Test
- 316L SS bolts shall be installed in the foam fire fighting monitor flanges.
- The MODU Operator (Contractor) shall conduct a monthly Fire Hose Station Function Test
- An annual compliant flow test shall be conducted to ensure the system (pumps, lines, relief valve, strainers) are functioning. The results shall be recorded and maintained on the MODU for verification as per below charts templates as a minimum.
- All new MODU's joining Operations and rigs returning from Shipyard after 5 year Surveys/ maintenance shall have a compliant 3rd Party Flow Test completed as per below charts and requirements as a minimum.
- Flow tests shall be completed using one or two deep-well pumps as needed to achieve the rigs normal operating manifold/system pressure and a single fire pump. Two pumps may only be used in cases where a booster/helideck pump has been installed. A by-pass line is required for all booster pumps in case of pump failure. A minimum of two successful pressure and flow tests (using different configurations) are required to be achieved.

Safety Equipment Register		
No.	Item Description	Quantity
	Fire Fighting Equipment	Offshore Rigs
1	Fixed Water mist System for MCC / VFD/Emergency generator/Engine room/ Mud pits	1
2	Rig floor deluge system	1
3	BOP area and accumulator unit deluge system	1
4	Helideck and helicopter fueling station foam system	1
5	Helicopter fuel tank dump system	1
6	Kitchen wet chemical System	1
7	Fire Pump	2
8	Fire Station with Fire Hoses and Nozzles	40
9	Fire Hoses - Spare	12
10	Fire Nozzles - Spare	10
11	Dry Powder Fire Extinguishers - 6, 12&30 kg.	90
12	CO_2 Fire Extinguishers - 6,25&53 kg.	45
13	Wheeled Foam Extinguishers 45 L	3
14	Fire Blanket	8
15	Firefighting Suits	12
16	Firefighting Gloves	12
17	Firefighting Helmets	12
18	Firefighting Visor	12
19	Firefighting Boot	12
20	Fire Axe	6

- Fire detection, extinguishing, and rescue equipment shall not be tampered with and shall not be removed for other than for firefighting, training, and/or required maintenance servicing. Any fire detection or fire extinguishing equipment removed from the offshore rig for maintenance, refurbishment, and/or recharging shall be replaced by compatible spare extinguishing equipment during the period they are missing.
- All firefighting and rescue equipment shall be conspicuously signed and appropriately mounted with OEM brackets and protective covers specifically designed for reliable service in the rugged offshore operating environment. Fire extinguishers shall be mounted so that the top of the extinguisher is 1m above the ground and shall be provided with an OEM protective cover or cabinet specifically designed for offshore installations. All fire extinguishers located in the potential helideck “Rotor Wash” Zone shall be stored in OEM Protective Cabinets.
- Fixed Extinguishing System Cylinder Racks (including operating instructions), Piping Manifolds, and associated Shutdown Interlocks/Switches shall be placed in protective enclosures when located outside the hull compartment or similar protected space.

Note:

Canvas or cloth covers shall not be used as protective covers for firefighting equipment located in the “ROTOR WASH ZONE.”

Carbon tetrachloride and other toxic vaporizing liquid fire extinguishers are prohibited.

- Each offshore rig shall have a dedicated fire water system supplied by a minimum of two

(2) electric fire water pumps taking suction from the deep well pump system supply loop. In addition, at least one (1) of the fire water pumps shall be configured to be effectively supplied from the sea chest and drill water tanks. The electric fire water pump supplied from the sea chest shall be connected to the rig's emergency power supply bus. All fire pumps shall be installed by the relevant requirements of NFPA 20.

12.4.1. Fixed Fire Extinguishing Systems

- IMO/Class approved manually actuated fixed fire extinguishing systems with the following specified shutdown interlocks shall be provided for the Engine Room, main SCR/PCR rooms, Paint Locker and Galley Hoods. All fixed suppression systems shall remain fully operational in all Dead Ship Loss of Power Scenarios.
- All fixed fire extinguishing system discharge manifold safety relief device discharge shall be routed to a safe unenclosed/uncongested location. These safety relief devices shall be included in the MODU RV Registry and Periodic Visual Inspection Process, as well as the Safety Relief Device OEM Recertification Process.
- Conspicuously placed sequential operational instructions shall be posted at each manual actuation station. Fixed Extinguishing System Cylinder Racks shall not be located in the hazard areas they protect, except the Galley Hood Extinguishing Systems.

12.4.2. Fixed Fire Extinguishing System Shutdown Interlocks

The shutdown interlocks shall be provided for each designated system. Manually operated fire dampers, located outside the fire hazard zone, are an acceptable design alternative to automatic damper closure devices.

12.4.3. Engine Room

Engine and Diesel Fuel Supply Shutdown, Supply and Exhaust fan shutdown and Supply and Exhaust damper closure interlocks.

12.4.4. MCC Compartments/SCR and VFD Rooms

HVAC Shutdown and Damper closure interlocks.

12.4.5. Paint Locker

Supply/Exhaust fan shutdown and Damper closure interlocks.

12.4.6. Galley Hoods

- Exhaust fan shutdown and damper closure interlocks. An integrated heat, smoke, and manual fire alarm station system shall be provided following applicable Classification Society Standards, with detection and alarm devices strategically located throughout the rig. Smoke detection devices shall be provided in all climate-controlled living and work spaces and fixed temperature/rate of rise heat detectors in all equipment and machinery spaces.
- Fire alarms shall be audible in all areas of the rig, high noise areas shall also be furnished with a visual alarm (strobe lights).
- All compartment fire doors shall be diligently maintained and remain closed at all times, unless fitted with magnetic locks (or a similar device) which shall automatically release when an alarm is activated. All main deck supply/exhaust and vent stacks shall be adequately labeled with the hull compartments/areas they serve. All main deck hatch covers shall have suitable means of access and closing mechanisms installed as appropriate. When mechanical or closing mechanisms are used they shall be inspected and function tested weekly and entered into the rigs lifting gear registry and preventative maintenance system.
- Annually each fire hose must be subjected to a test pressure equivalent to the maximum pressure to which it may be subjected during operation. Each fire hose must be subjected to a pressure of at least 100 p.s.i.
- The access to any fire hose station shall not be blocked.
- Each fire hose station shall be equipped with an appropriate spanner wrench.

- Each fire hose shall be properly stored on a Fire Equipment OEM designed offshore rack or reel with a protective cabinet or cover when not in use. All Fire Hose Stations located within the potential helideck “Rotor Wash” Zone shall be placed in OEM Protective Cabinets.
- Each fire nozzle shall remain continuously attached to the hose at each designated fire hose station.
- Each fire station on an offshore rig shall be properly identified by marking: “FIRE STATION NO.____” next to the station in letters at least 5 centimeters (2 inches) high.
- On each offshore rig, there shall be at all times at least one formally trained helideck crew holding valid OPITO in HOIT and Heli-Deck Crash Fire Rescue operations. The minimum required Heli-deck crew will include at least four personnel: HLO, baggage handler and a 2 member Heli-Deck Crash Fire Fighting Team.
- The required Heli-deck crew shall demonstrate knowledge and competency in the following critical operational elements:
- Rig Heli-Deck Fire Attach Plan. Basic Heli-Deck Crash Rescue. Rig Heli-Deck Fire Fighting System. Basic Heli-Deck Fire Fighting.
- Crash rescue box is to be permanently located in a designated staging area readily accessible to the heliport. This box is to be highly visible and designated exclusively for crash equipment.
- Portable and Wheeled Fire Extinguishers shall be provided following the applicable Classification Society Requirements

B13. Electrical Safety

EGPC

13.1. Scope

This procedure applies to all EGPC drilling /workover contractor facilities that safeguard employees from the hazards associated with electrical energy during activities such as installation, inspection, operation, maintenance, and demolition of electrical and related equipment.

13.2. Objective

13.2.6.1. The purpose of these procedures are as follows:

- Prevent electrical-related injuries.
- Implement proactive controls across the spectrum of expected hazards.
- Educate all personnel about electrical hazards.
- Promote a vibrant electrical safety culture.
- Demonstrate compliance with established standards.

13.3. Definitions

Definitions are provided to clarify terms and provide additional resource information.

13.3.1. Classified Area:

An area that poses electrical hazards and is classified following the guidelines of a nationally recognized electrical code. Areas are defined by class, division, and group. See National Electrical Code, NFPA 70, for complete definition of hazardous areas. For purposes of the Electrical Safety policy, Class I areas are to include Division 1 and Division 2 classified areas. Consult Facility Electrical Hazardous Area Classification drawings to identify where Class I areas are defined. See hazardous zone layout.

13.3.2. Tag-out

The placement of a tag-out device on an energy-isolating device according to the procedure to indicate that the equipment may not be operated until the tag-out device is removed.

13.3.3. Authorized Lockout/tag out employee

A person who has completed the required hazardous energy control and is authorized to lockout or tag out a specific machine or equipment to perform service or maintenance.

13.3.4. De-energized electrical work

Electrical work that is performed on equipment that has been previously energized and is now free from any electrical connection to a source of potential difference and from electrical charges.

13.3.5. Energy source

Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

13.3.6. Exposed electrical parts

Energized parts that can be inadvertently touched or approached nearer than a safe distance by a person. Parts not suitably guarded, isolated, or insulated. Examples include terminal contacts or lugs, and bare wiring.

13.3.7. Grounding

A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth or to some conducting body that serves in place of the earth.

13.3.8. Hazardous Location

An area in which airborne flammable dust, vapor, or gas may be present and would represent a hazard if a source of ignition were present.

13.3.9. Interlock

An electrical, mechanical, or key-locked device intended to prevent an undesired sequence of

13.3.10. Isolating Switch:

A switch intended for isolating an electric circuit from the source of power. It has no interrupting rating and is intended to operate only after the circuit has been opened by some other means.

13.3.11. Life Safety Equipment

Equipment that provides critical protection for safety in the event of an emergency or other serious hazard. Life safety equipment, which is electrically energized, should be worked on using Energized Electrical Equipment procedures to ensure that the protection provided by the equipment is not lost (e.g., fire alarm and evacuation).

13.3.12. Limited Approach Boundary

An approach limit is a distance from an exposed live part within which a shock hazard exists.

13.3.13. Restricted Approach Boundary

An approach limit distance from an exposed live part within which there is an increased risk of shock, due to electrical arc-over combined with inadvertent movement, for personnel working in close proximity to the live part.

13.3.14. Remote-control Circuit

Any electric circuit that controls any other circuit through a relay or an equivalent device.

13.3.15. Switching Devices

Devices designed to close and/or open one or more electric circuits. Included in this category are circuit breakers, cutouts, disconnecting (or isolating) switches, disconnecting means, interrupter switches, and oil (filled) cutouts.

13.3.16. Voltage (of a circuit)

The greatest root-mean-square (effective) difference of potential between any two conductors of the circuit concerned.

13.3.17. Voltage, high

Circuits with a nominal voltage more than 50 volts.

13.3.18. Voltage, low

Circuits with a nominal voltage less than or equal to 50 volts.

13.4. Responsibilities:

13.4.1. Rig Electrician

- Shall be aware of electrical hazards and implement required controls
- Know how to protect themselves from adverse effects of electric shock/burn.
- Ensure all electrical equipment is grounded.
- Ensure that the grounding loop is connected before powering up and ground Ohm reading is within acceptable limits
- Discuss and review work/isolation permits with the concerned party and ensure that all personnel are aware of the related hazards and controls

13.4.2. Work Group Supervisor

The person who will supervise the work execution and persons performing the job.

13.4.3. Rig Management:

- Provide a safe work environment and the implementation of this procedure
- Ensure that employees are provided with the required information and training on the electrical hazard and required controls.
- Determine the required PPE, ensure its availability, and that employees are properly trained on how to use that equipment

13.5. Procedure

13.5.1. Electrical Safety Principles & Controls

13.5.1.1. Principles of Electrical Safety

- Electricity is different from other forms of hazardous energy, because it is both undetectable by human senses and potentially immediately fatal upon contact. Thus, it requires a broad application of specialized equipment construction methods and safe work practices to prevent serious injuries or death.
- All electrical equipment must be installed and used following the manufacturer's instructions, Equipment shall be approved for use and shall not be modified or used outside of its approval intent.
- Sufficient training is required to safely interact with electrical equipment. Operators must be trained to operate equipment within its design intent and not defeat engineering controls.
- Personnel who service, modify, repair, or build electrical equipment must be able to recognize the hazards and establish controls to prevent injury
- The most fundamental aspect is to Test before Touch. Without an innate human sense to detect a hazardous condition, a qualified worker must understand how to properly use test equipment to prove an Electrically Safe Work Condition.
- Live repair work is considered extremely hazardous and is generally prohibited. Exceptions can be made but require detailed justification and approval by Rig management, after taking the required precautions.
- Whenever possible, all work performed on equipment will be DE energized. To prove and maintain DE energization, a qualified worker must follow a strict process to establish an Electrically Safe Work Conditions.
- This process involves both Lockout/Tag out and Test before Touch. Because this is so fundamental to safe electrical work
- Some forms of diagnostics require the equipment to be energized while circuit parts are exposed. Only qualified workers with the proper PPE may perform diagnostics.
- Some combinations of switching, testing, and LOTO can involve significant procedural complexity. In these cases, written work plans are developed, reviewed, and approved by knowledgeable parties in advance and executed with formal procedural compliance (Isolation of Systems procedure)
- Proper body positioning must be an integral part of both everyday work habits and detailed work planning. This principle is embedded in the shock protection and arc flash protection boundaries, but must also be emphasized in everything from routine switching activities to setting up barriers and barricades.

13.5.1.2. Planning Electrical Work

- Every electrical job shall be planned for performing the job briefing.
- Planning is simply performing work permits, isolation, and SJAs.
- Define the scope of work.
- Analyze the Hazards.
- Develop/Implement controls.

13.5.1.3. Electrical Hazard Analysis

Qualified Electrical Workers shall be required for the following tasks, which are classified as electrical work for any modification, repair, build, or assembly of electrical circuit parts or wiring after being placed in an Electrically Safe Work Condition. Examples include:

- Making or tightening electrical terminal connections with tools, as poor or improper connections can create serious hazards.
- Any work on the grounding and bonding system.
- Any work on the power entry module or field wiring terminals
- Replacing critical components with new components of different ratings. Critical components include electrical components or assemblies used in a power or safety circuit whose proper operation is essential to the safe performance of the system or circuit (e.g. fuses, circuit breakers, power wiring, transformers, heaters, motors, overloads, interlocks, emergency stops, etc.).

Such hazard analysis shall protect each employee from arc flash and from contact with energized electrical conductors or circuit parts, operating, directly with any part of the body or indirectly through some other conductive object.

13.5.1.4. Developing Controls

- Depending on the results of the Electrical Hazard Analysis Recognizing electrical hazards, Controls must be selected to minimize both the risk to the persons performing the work and to persons who may be in the area. Controls are considered when planning the work.
- Employees who work directly with electricity should use the personal protective equipment required for the jobs they perform. This equipment may include:
  - Rubber insulating gloves,
  - Insulating hoods,
  - Insulating sleeves,
  - Dielectric matting or blankets,
  - Industrial protective helmets designed to reduce electric shock hazard.
- Electric grade non-conducting deck coverings (e.g. non-conducting mats) or non-conducting gratings shall be provided in each working area in front of and behind switchboards, as per ASTM D178: Standard Specification for Rubber Insulating Matting.
- Routine infrared inspections of energized electrical systems shall be performed annually prior to shut down. More frequent infrared inspections, for example, quarterly or semiannually, should be performed where warranted by loss experience, installation of new electrical equipment, or changes in environmental, operational, or load conditions
- Infrared surveys should be performed during periods of maximum possible loading but not less than 40 percent of rated load of the electrical equipment being inspected. The circuit loading characteristics should be included as part of the inspection documentation.
  - Equipment enclosures should be opened for a direct view of components whenever possible. When opening the enclosure is impossible, such as in some busway systems, internal temperatures can be higher than the surface temperatures. Plastic and glass covers in electrical enclosures are not transparent to infrared radiation.
  - Inspect distribution systems with imaging equipment capable of detecting a minimum temperature difference of 1° C at 30° C.

Temperature difference (ΔT) based on comparisons between similar components under similar loading	Temperature difference (ΔT) based on comparisons between components and ambient air temperatures	Recommended Action
1°C - 3°C	1°C - 10°C	Possible deficiency; warrants investigation
4°C – q5°C	11°C - 20°C	Indicates probable deficiency, repair as time permits
---	21°C - 40°C	Monitor until corrective measures can be accomplished
>15°C	>40°C	Major discrepancy; repair immediately

Thermographic survey - Suggested actions based on Temperature rise, as per Table.100.8 ANSI/NETA ATS

- The electrical supervisor should be immediately notified of critical, impending faults so that corrective action can be taken before a failure occurs. Priorities should be established to correct other deficiencies.
- Provide a report which includes the following:
- Description of equipment to be tested.
- Discrepancies.
- Temperature difference between the area of concern and the reference area.
- Probable cause of temperature difference.
- Areas inspected. Identify inaccessible and unobservable areas and equipment.
- Identify load conditions at time of inspection.
- Provide photographs of the deficient area.
- Recommended action

13.5.1.5. Lighting Requirements for Drilling Rig Platforms

How to select lighting fixtures for Drilling Rig platform

The protection level and explosion-proof level of the lamp housing shall be suitable for the installation site and shall meet the following requirements:

- The minimum requirements for the protection level of indoor dry spaces should meet IP23;
- The minimum requirements for indoor large dripping spaces and mechanical damage hazard spaces shall meet IP34;
- The minimum requirements for ballast pump rooms, refrigerated rooms, galleys and laundry rooms should meet IP44;
- The minimum protection level for outdoor and open decks should meet IP55.
- When it is in the open air or exposed to rain and waves, the minimum protection level should meet IP56.
- Positive pressure ventilation (Exp), flameproof (Ex d) and intrinsically safe (Ex "ia" or "ib") are available in Class 1 hazardous areas. Increased safety (Ex e), positive pressure ventilation (Exp), flameproof (Ex d) and intrinsically safe (Ex "ia" or "ib") are available in Class 2 hazardous areas.
- The types of lighting fixtures for Drilling Rig platforms can be divided into: fluorescent lamps, high pressure sodium lamps, metal halide lamps, emergency exit lamps, aircraft deck boundary lamps, windsock lamps, etc. Each type of lamps is used in different locations. The following mainly introduces fluorescent lamps and high pressure sodium lamps. , the installation of emergency exit lights.
- Fluorescent lamps: embedded, pole-mounted, wall-mounted, ceiling-mounted, etc.;are used for indoor spaces with ceilings. The pole-mounted type is installed on the boundary of the platform, the wall-mounted type is installed on the firewall, and the hoisting type is installed in the indoor mechanical space.
- High pressure sodium lamp: The flood light is installed on the platform column with a height of 5.5~6 meters. The flood light mainly illuminates the interior of the platform. The floodlight

should ensure that its movable part is within the illumination range required by the work, and the rotation is flexible and unobstructed, and the light is not obstructed. Flood lights are also installed on the border of the platform, mainly illuminating the sea surface.
- The emergency exit light is the light fixture of the emergency lighting system. Installed at the door of the room, it is used to indicate the escape route and indicate the rapid evacuation of personnel

Area	Normal lighting (average illuminance)
Staircase/passage area	100 Lux
Restrooms/toilets/changing rooms/other areas	100 Lux
material storage area	100 Lux
occupancy cabin	150 Lux
machinery spaces	150 Lux
Dining Room/Infirmary/Office/Control Room/Telegraph Room	200 Lux
kitchen	300 Lux
Frequency conversion room/electrician room/distribution room	300 Lux

Illumination requirements for lighting fixtures:

The number and location of lamps in each area depend on the average illuminance of the room. Different areas and rooms have different illuminance requirements. The average illuminance of each area on the platform is as follows:

13.5.1.6. The layout of lighting fixtures

The layout of other areas of the platform lighting fixtures should pay attention to the following aspects:

- It should be ensured that there is sufficient lighting in places where frequent operations and maintenance are required.
- The escape route, emergency escape and firefighting equipment, and other premises must have emergency temporary lighting.
- The arrangement and installation position and height of the lamps should ensure that the lamps are easy to operate and maintain, avoid being arranged above the movable equipment, do not affect the aisles and safety passages, and provide lighting for the platform to the maximum extent; lamps should not be arranged in the pipeline method. To avoid the gasket breaking and the medium in the pipe spraying to the lamp.
- Emergency lighting should be arranged in the emergency equipment area so that the operation and maintenance of emergency equipment will not be affected when the emergency generator supplies power.
- The light of the lamp is not affected by any obstacles.
- The aircraft deck boundary lights and windsock lights shall ensure the safe take-off and landing of the helicopter on the offshore platform, and the arrangement and installation position shall comply with the relevant

13.5.1.7. DE energizing electrical equipment

- Power switches are the normal operator method for turning off electrical equipment and typically do not remove all electric power from the equipment. Some electrical parts within equipment remain alive even after all visible or audible signs seem to show otherwise. Just because the external lights turn off, vibration sounds cease, and visible movement stops, do not assume that there is no shock.

- Sometimes it is necessary to open electrical equipment to perform non-electrical work that does not require an electrical worker. However, the electrical hazard must be isolated, controlled, and verified safe before work. This is called "establishing an Electrically Safe Work Condition".

13.5.1.8. Working on De-energized Equipment (Electrically Safe Conditions)

The National Fire Protection Association (NFPA) lists six steps to ensure conditions for electrically safe work:

- Identify all sources of power to the equipment. Check applicable up-to-date drawings, diagrams, and identification tags.
- Remove the load current, and then open the disconnecting devices for each power source.
- Where possible, visually verify that the blades of disconnecting devices are fully open or that the draw-out-type circuit breaker is fully withdrawn.
- Apply lockout/tag-out devices following a formal.
- Test each phase conductor or circuit part with an adequately rated voltage detector to verify that the equipment is de-energized. Test each phase conductor or circuit part both phase-to-phase and phase-to-ground. Check the voltage detector before and after each test to be sure it is working.
- Properly ground all possible sources of induced voltage and stored electric energy (such as capacitors) before touching. If conductors or circuit parts that are being de-energized could contact other exposed conductors or circuit parts, apply ground-connecting devices rated for the available fault current.

13.5.1.9. Lockout/Tag out Program:

- After de-energizing, each employee at risk should apply an individual lockout/tag-out device to each source of electric energy.
- Pushbuttons or selector switches cannot be used as the only way to de-energize, A lockout device is a key or combination lock with a tag that can be attached to a disconnecting device to prevent the re-energizing of the equipment being worked on without removal of the lock.
- The lockout device should have a way of identifying by isolation/work permits and ensure all keys that have been used for energy isolations are under the control of the PIC and kept in his office in a locked box and given access to the NTP when he is off shift. But after all, the work has been completed, a competent person who did the isolation shall remove the lock by himself.
- Before beginning work, each involved employee must verify through testing that all energy sources have been de-energized. Electric lockout/tag-out procedures should be coordinated with all other site procedures for controlling exposure to electric energy and other types of energy sources.
- verifying that the circuit is de-energized and can't be restarted by voltage testing, grounding requirements, shift changes, coordination with other jobs in progress,
- Work/isolation permits are mandatory for keeping track of all involved personnel, applying and removing lockout/tag-out devices, returning to service, and temporarily re-energizing for testing/positioning.
- Lockout/tag-out procedures/permits should be developed for each machine or piece of equipment that will require servicing.
- Each person who could be exposed to electric energy must be involved in the lockout/tag-out process.

13.5.1.10. Energized electrical work:

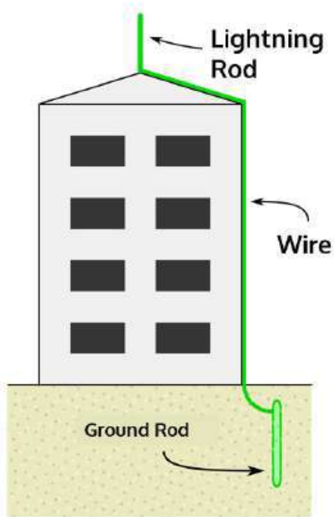
- Repair, maintenance, troubleshooting, or testing on electrical circuits, components, or systems while energized (i.e., life) is considered energized electrical work.
- There are two basic hazards when performing live work, electric shock and electrical explosion (arc flash). Arc flash can cause burns and explosive force trauma injury. These hazards can be controlled using structured safety procedures and appropriate Personal Protective Equipment (PPE).

- Only Qualified Electrical Workers are permitted to work on energized circuitry of 50 volts/25 amps to ground or greater.
- Conductive materials, tools, and equipment that are in contact with any part of an employee's body shall be handled in a manner that prevents accidental contact with live parts. Such materials and equipment include, but are not limited to, long conductive objects, such as ducts, pipes and tubes, conductive hose and rope, metal-lined rules and scales, steel tapes, pulling lines, metal scaffold parts, structural members, bull floats, and chains.
- Conductive Articles Being Worn. Conductive articles of jewelry and clothing (such as watchbands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, metal headgear, or metal frame glasses) shall not be worn where they present an electrical contact hazard with exposed live parts
- Employees shall not enter spaces containing live parts unless illumination is provided that enables the employees to perform the work safely.
- For repair work within the restricted approach boundary of energized electrical installations rated at 600 volts or above, two Qualified Persons shall be present at all times with an appropriately rated rescue hook.
- For repair work within the restricted approach boundary of energized electrical installations rated below 600 volts, an electrical emergency responder shall accompany the Qualified Person performing the work with an appropriately rated rescue hook.
- After a circuit is de-energized by the automatic operation of a circuit protective device, the circuit shall not be manually reenergized until it has been determined that the equipment and circuit can be safely energized. The repetitive manual reclosing of circuit breakers or reenergizing circuits through replaced fuses shall be prohibited. When it is determined from the design of the circuit and the overcurrent devices involved that the automatic operation of a device was caused by an overload rather than a fault condition, examination of the circuit or connected equipment shall not be required before the circuit is reenergized.

13.5.1.11. Ground Fault Circuit Interrupt (GFCI):

NFPA 70E (5.4.5) requires the use of GFCI protection in conductive work locations and in all locations currently required by the latest edition of the NEC

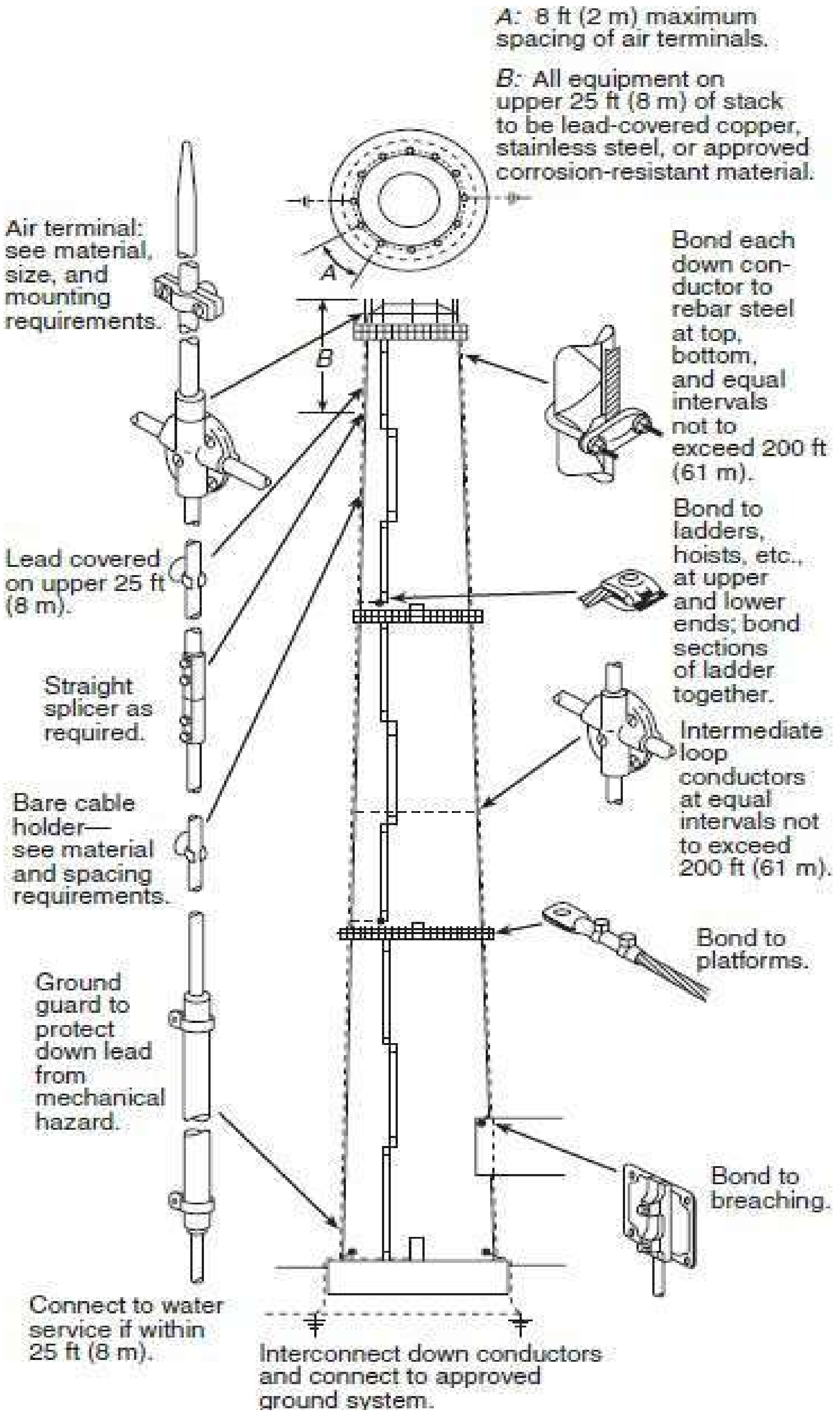
- A Ground Fault Circuit Interrupter (GFCI) is a safety device whose function is to interrupt the electric circuit to the load when a fault current to the ground exceeds a predetermined value that is less than that required to operate the over-current protective device of the supply circuit.
- GFCIs sense when current—even a small amount—passes to the ground through any path other than the proper conductor. When this condition exists, the GFCI quickly opens the circuit, stopping all current flow to the circuit and a person receiving the ground fault, The incoming two-wire circuit is connected to a two-pole, shunt-trip overload circuit breaker.
- Do not bypass a GFCI or look for a non-GFCI-protected outlet if a GFCI trips repeatedly. Tripping is a sign of a potentially fatal shock hazard and should be evaluated and investigated carefully.
- Do not continue to reset the GFCI if it trips repeatedly
- GFCIs are required to be tested "following manufacturer's instructions" periodically.
- Distribution boxes in camp site shall be equipped with RCCB (residual current circuit breaker) and to be tested periodically and record results.
- Grounding layout shall be verified before powering up any equipment and to ensure that the maximum resistance of the ground wires is 1 ohm. Ground wires must be able to transfer high currents without burning up. Lightning protection system
- The lightning protection system is a complete system of strike termination devices, ground terminals, interconnecting conductors that shall be bonded to the building or structure grounding electrode system.
- One of the common lightning protection system is Early Streamer



Emission air terminal, also known as ESE or as an ionizing lightning rod, it is an external lightning protection system.

- The aim of the lightning metallic rod (usually copper) is to protect a structure from lightning damage by intercepting flashes and guiding their currents into the ground (discharge) in order to achieve a controlled impact without damage.

Note: For lightning protection system installation, the top of the light terminal shall be installed at least 2 meters over the area that it protects (including antennas, refrigerating towers, roofs and tanks) Each lightning rod shall be connected to at least two down conductors.



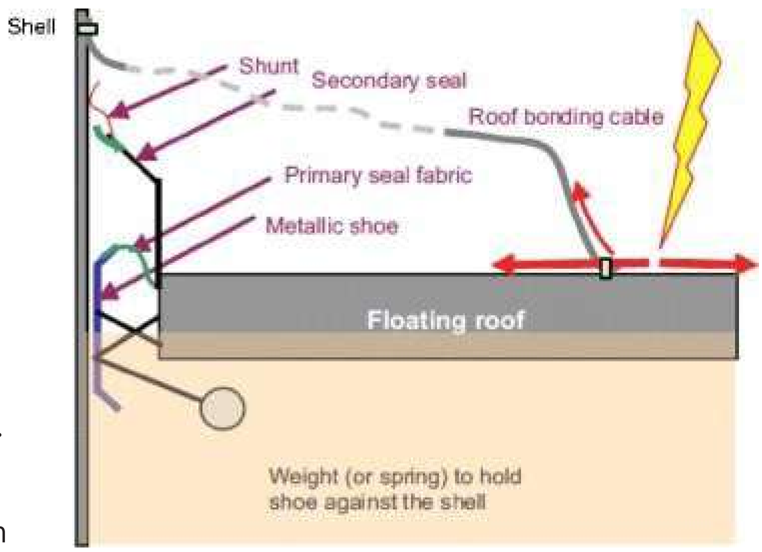
- Mast structures shall require one strike termination device, down conductor, and ground terminal.
- Metal tanks constructed so as to receive a stroke of lightning without damage, it shall require only bonding to ground terminals .
- Strike termination devices shall be provided for all parts of any ordinary structure that are likely to be damaged by direct lightning flashes , metal parts of a structure that are exposed to direct lightning flashes and that have metal thickness of 4.8 mm or greater shall only require connection to lighting protection system.
- Strike termination devices shall be made of solid copper or stainless steel (see attached pic for lighting protection system).

We have two types for tank farms:

- Metallic tanks, vessels, and process equipment that contain flammable or combustible liquids or flammable gases normally do not require lightning protection since this equipment is well shielded from lightning strikes. Equipment of this type is normally well grounded and is thick enough not to be punctured by a direct strike.

Note: This does not apply to liquids or gases stored under pressure, such as liquefied natural gases or liquefied petroleum gases.

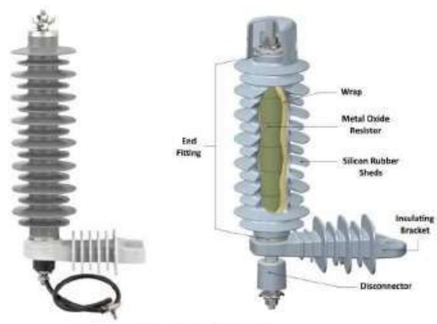
- Concrete Tanks and Silos. Lightning protection systems for concrete (including pre stressed concrete) tanks containing flammable vapors, flammable gases, and liquids that can produce flammable vapors; and concrete silos containing materials susceptible to dust explosions shall be provided with either external conductors or with conductors embedded in the concrete.



Note: Protection where floating roofs utilize hangers located within a vapor space, the roof shall be electrically bonded to the shoes of the seal through the most direct electrical path at intervals not greater than 10 ft (3 m) on the circumference of the tank. These shunts shall consist of flexible wide stainless steel straps or the equivalent in current-carrying capacity and corrosion resistance. The metallic shoe shall be maintained in contact with the shell and without openings (such as corrosion holes) through the shoe.

Regarding process area & buildings:

- Electrical systems and utilization equipment within the structure can require further surge suppression addition to the bonding of metal bodies, surge suppression should be provided to protect power, communication, and data lines from dangerous over voltages and sparks caused by the lightning strikes.
- Surge arrester protects the installation from inside while lightning arrester protects the equipment from outside by intercepting the surges and send the extra unwanted energy to the ground wire while lightning arrester divert the energy flow to the ground through the arrester to the ground.



13.5.1.12. Electrical Shock

- Electricity is one of the most commonly encountered hazards in any facility. Under normal conditions, safety features (engineering controls) built into electrical equipment protect workers from shock.

surge arrester

- Shock is the flow of electrical current through any portion of the worker's body from an external source. Accidents can occur in which contact with electricity results in serious injury or death.
- Most electrical systems establish a voltage reference point by connecting a portion of the system to an earth ground, because these systems use conductors that have electrical potential (voltage) concerning ground, a shock hazard exists for workers who are in contact with the earth and exposed to the conductors.
- If a person comes in contact with an energized (ungrounded) conductor, while also in contact with a grounded object, an alternate path to ground is formed in which current passes through his or her body.

The effects of electric current on the human body depend on many variables, including the:

- Amount of current
- Waveform of the current (e.g., DC, 60 Hz AC, RF, impulse)
- Current pathway through the body (determined by contact location and internal body chemistry)
- Duration of shock
- Energy deposited into the body

The amount of current passing through the body depends on:

- Voltage driving the current through the body
- Circuit characteristics (impedance, stored electrical energy)
- Frequency of the current
- Contact resistance and internal resistance of the body
- Environmental conditions affecting the body's contact resistance

13.5.1.13. Electrical Burn

- Burns suffered in electrical accidents are of three basic types – electrical current burns, arc burns, and thermal contact burns.
- The cause of each type of burn is different, and prevention necessitates different controls.

13.5.1.14. Electrical Current Burns

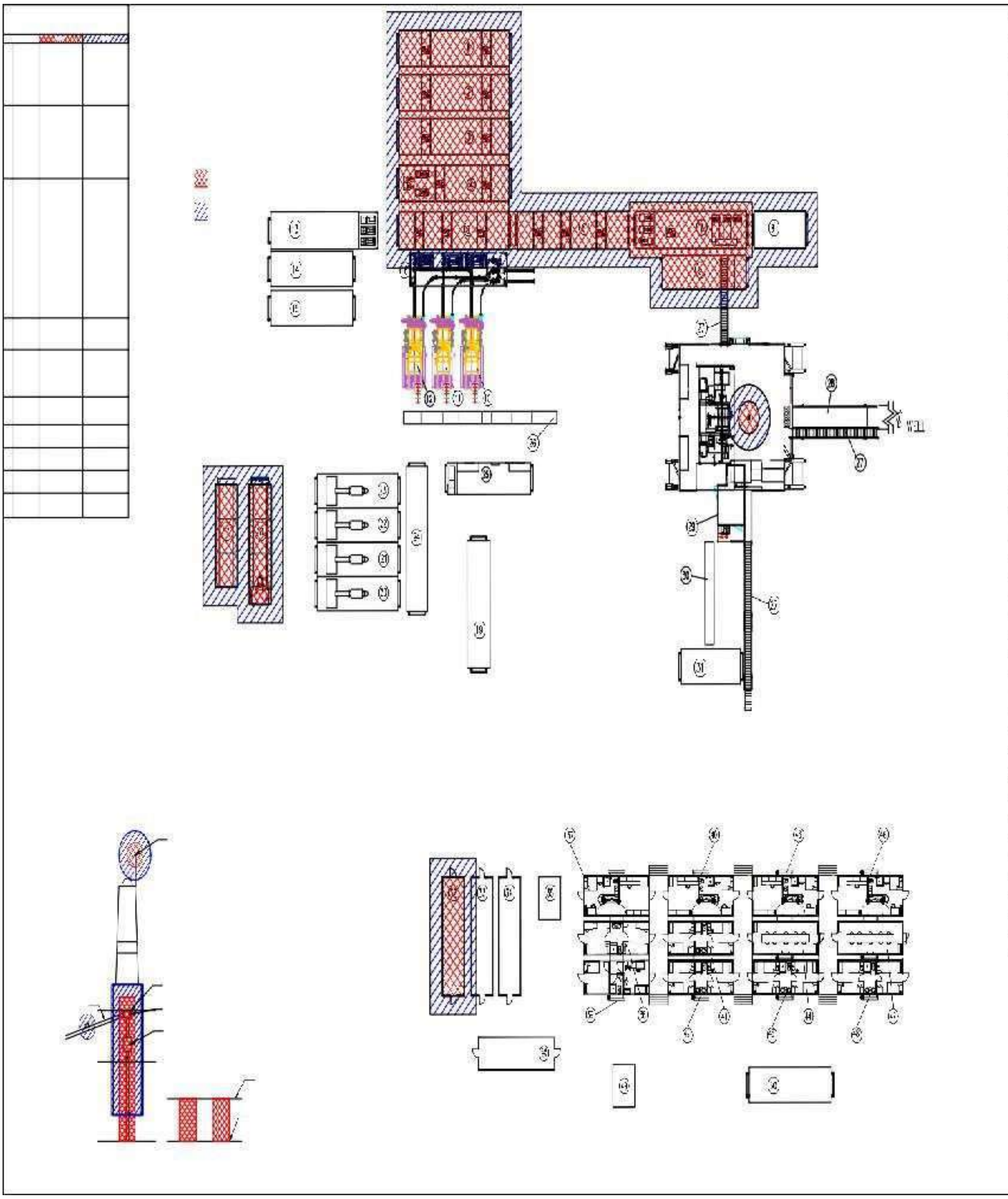
- In electrical current burns, tissue damage (whether skin-level or internal) occurs because the body is unable to dissipate the heat from the current flow.
- Typically, electrical current burns are slow to heal. Such electrical burns result from shock currents,

13.5.1.15. Arc Flash Burns

- Arc flash burns are caused by electric arcs and are similar to heat burns from high-temperature sources. Temperatures generated by electric arcs can melt nearby material, vaporize metal in close vicinity, burn flesh and ignite clothing at distances of several meters, depending on the energy deposited into the arc.
- The arc can be a stable low-voltage arc, such as in an arc welder, or a short-circuit arc at higher voltage, resulting in an arc flash and/or arc blast. Such an expanding arc can ignite clothing and/or cause severe burns at a distance from inches to feet.

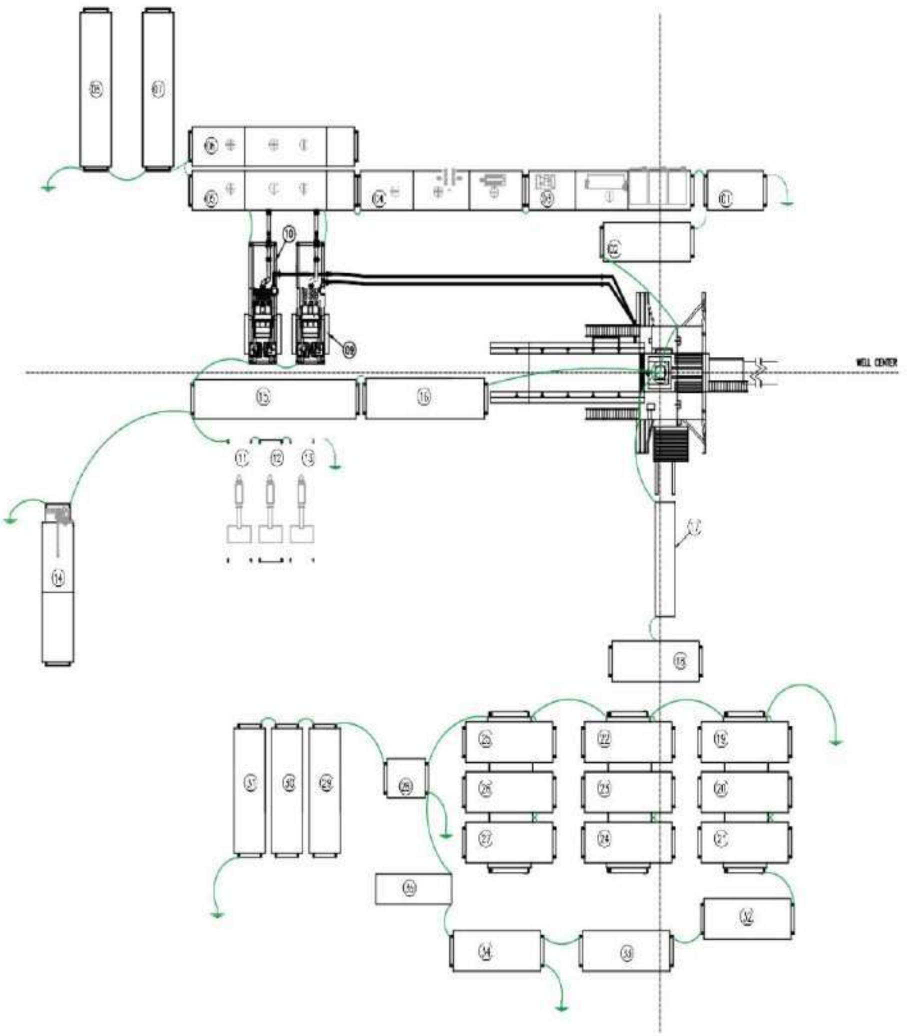
13.5.1.16. Thermal Contact Burns

- Thermal contact burns are those that occur when the skin comes into contact with the hot surfaces of overheated electrical conductors, including conductive tools and jewelry. This injury results from proximity to a high-current source with a conductive object.
- Thermal burns can occur from low-voltage/high-current systems that do not present a shock or arc flash hazards, and controls should be considered. The controls to prevent injury from shock and arc flash should also protect against thermal contact burn.



ITEM	DESCRIPTION
1	Reserve Tank 2
2	Reserve Tank 1
3	Mix Tank 2
4	Mix Tank 1
5	Suction Tank
6	Intermediate Tank
7	Shaker Tank
8	Choke Manifold
9	Cooling and Trip Tank
10	Mud Pump 1
11	Mud Pump 2
12	Mud Pump 3
13	Fresh Water Tank
14	Drill Water Tank 1
15	Drill Water Tank 2
16	Mud Pump Manifold
17	Diesel Tank 1
18	Diesel Tank 2
19	Emergency Generator
20	Engine 1
21	Engine 2
22	Engine 3
23	Engine 4
24	VFD House
25	MCC Room
26	Grass Hopper
27	Ladder
28	Catwalk
29	Driller Cabin
30	BOP Hoses Suitcase
31	BOP Accumulator Unit
32	Welder Workshop
33	Mech. W/S
34	Warehouse
35	Rig Site Transformer
36	FSUP Caravan
37	STP Room
38	Mech/Elec. Room
39	Radio Room
40	CC Man Room
41	VIP Room
42	Mud Engineer
43	Service
44	Meeting
45	Clinic
46	Mess Hall
47	Service
48	Service
49	General W/C
50	Potable Water Tank

Figure A. Hazardous zone layout example



No	Description
1	Chock manifold
2	Trip tank
3	Shale shaker tank
4	Intermediate tank
5	Suction tank
6	Reserve tank
7	Drill water tank#01
8	Drill water tank#02
9	Mud pump#01
10	Mud pump#02
11	Power engine#03

[redacted]

Figure B. main camp grounding layout example

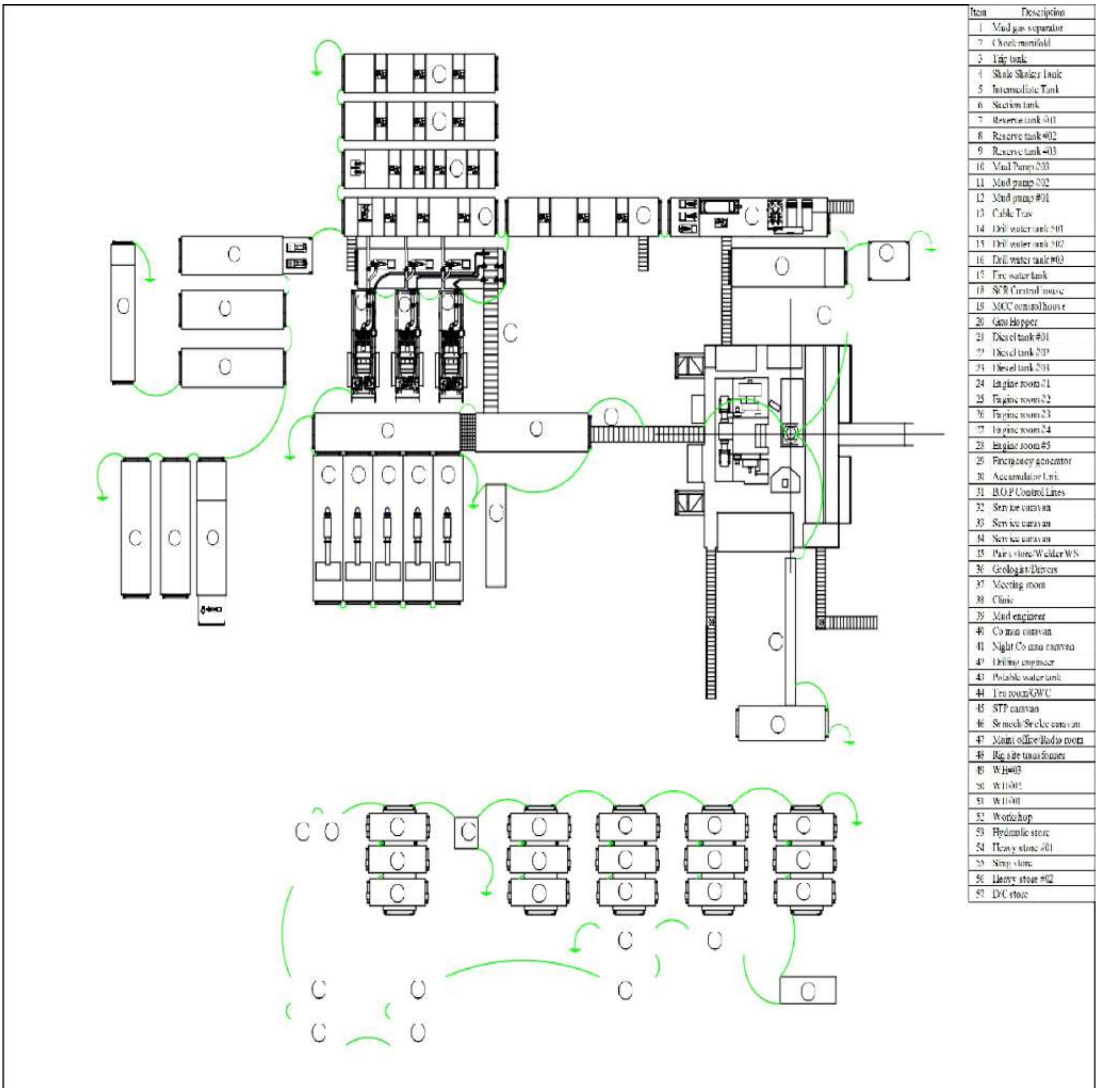


Figure C. Workover Rig grounding layout

B14. Personal Protective Equipment (PPE)

EGPC

14.1. Scope

PPE guidelines and requirements should apply to all employees exposed to workplace hazards. This includes employees who work in a variety of settings, such as manufacturing, construction, and healthcare

14.2. Purpose

The purpose is to ensure employees are provided with the appropriate personal protective equipment (PPE) to protect them from workplace hazards.

14.3. Responsibilities

Rig contractors management shall hand proper PPE to its employees as per EGPC requirements and this procedure.

14.4. Personal Protective Equipment requirements

14.4.1. Head Protection

Safety Helmets "Caps & Hats"

- Standard Compliance:
  - ANSI Z89.1 2003, Class E.
  - ANSI Z89.1-2014
  - CSA Z94.1-2015
- Minimum Required for: All personnel in work areas

Helmet Suspension

- Standard Compliance: ANSI Standard
- Minimum Required for: Used for all crew to hold the helmet against high wind speed

14.4.2. Eye and Face Protection

Safety glasses

- Standard Compliance:
  - ANSI Z87.1-2010
  - CSA Z94.3-2007
  - Military V0 Ballistic Test for Impact meet or exceed the latest version of ANSI Z87.1
- Minimum required for: All personnel in work areas for eye protection.

Medical-prescribed safety glasses

- Standard Compliance: N/A
- Minimum Required for: All personnel in work areas for eye protection

Safety goggles

- Standard Compliance:
  - ANSI Z87+ (High Impact)
  - ANSI Z87+ (High Impact),
  - ANSI Z.87.1/1989, CA 19,071
  - ANSI Z.87.1/1989, CA 19,071
  - CSA Z94.3 - Certified to the requirements of CSA Z94.3,
  - ANSI Z87.1
  - EN-166
- Minimum Required for All personnel working with HP machine, chemicals, buffering, grinding, chipping & Sand/water Blasting, or breaking any metal or material that involves a flying chip hazard; i.e. removing or replacing dies in pipe tongs, using grinders, drills, etc.

Welding & grinding goggles

- Standard Compliance:
  - EN166
  - EN 175
- Minimum Required for: Welders

Arc Flash Protection Face Shield

- Standard Compliance: Meet or exceed current ASTM F2178 and ANSI Z87.1 standard specifications
- Minimum Required for:
  - Electricians with any operation that could result in arch flashes.
  - Arc flashes can be generated by various conditions including mechanical breakdowns or failure of electrical circuits, current overloads, or accidental contacts.
  - This explosive condition includes a broad spectrum of electrical magnetic energy, plasma, fragments of damaged equipment, and molten metal from the destruction of conductors at the point of the arc flash.

Face Shield Parts

- Standard Compliance:
  - ANSI 287.1
  - EN 166
- Minimum Required for: All personnel working with HP machine, chemicals, buffering, Grinding & Sand/water Blasting

Welding shields/ helmets

- Standard Compliance:
  - ANSI Z87.1
  - CAN/CSA Z94.3
- Minimum required for: Made from Super TuffTM nylon, which is lighter than fiberglass. Drop-down ratchet headgear. This helmet has a coating that makes it cooler and sheds spatter without burning.

Eyewash Stations

- Standard Compliance:
  - ANSI Z358.1-2014
  - SEI Certified
- Minimum Required for:
  - Uses less space while delivering ANSI-required 15-minute flush
  - The clear tank allows easy fill level check Three mounting options; Wall, Bench Top, or Transportable Waste Cart
  - Allows for a fluid start/stop flow with no expensive cartridges to replace water preservatives sold separately

Eyewash saline solution

- Standard Compliance:
  - ANSI Z358.1
  - ANSI Z358.1
- Minimum Required for: Eye Wash Saline Concentrate: For Use With Fendall Eye Wash Stations

Eyewash Saline Solution bottles

- Standard Compliance:
- Minimum Required for:

Combined Emergency Shower / Eye Wash Station

- Standard Compliance: ISO 10993-1:2009 Biological evaluation of medical devices -- Part 1: Evaluation and testing within a risk management process.
- Minimum Required for:

- 0.9 % sterile sodium chloride – similar to that of the human eye
- Visible and readily available first aid
- Easily mounted on the wall close to the workplace and immediate washing may be needed
- Ensures quick and efficient eyewash
- Supplied with pictograms and mirror
- Use in dust-free and dirt-free areas

14.4.3. Body Protection (Coveralls/Jackets)

Long sleeve coverall

- Standard Compliance:
  - ISO 13688
  - EN 1194
  - EN 340
  - EN 342
  - EN 343
  - EN 466
  - EN 11612 /9
  - EN 11611
- Minimum Required for: All Onshore and Offshore Personnel

Short sleeve coverall

- Standard Compliance:
  - ISO 13688
  - EN 1194
  - EN 340
  - EN 342
  - EN 343
  - EN 466
  - EN 11612 /9
  - EN 11611
- Minimum Required for: All Personnel to be used in camp or accommodation area.

Thermal (winter) coverall

- Standard Compliance: All Onshore and Offshore Personnel
- Minimum Required for:
  - ISO 13688
  - EN 1194
  - EN 340
  - EN 342
  - EN 343
  - EN 466
  - EN 11612 /9
  - EN 11611

Winter jacket

- Standard Compliance:
  - ISO 13688
  - EN 1194
  - EN 340
  - EN 342
  - EN 343
  - EN 466
  - EN 11612 /9
  - EN 11611
- Minimum Required for: All Onshore and Offshore Personnel

Welder coverall

- Standard Compliance:
  - EN ISO11611:2007
  - Class 2-A1
  - EN ISO 11612:2008 A1 B1 C1
  - EN ISO 11612, EN 1149-5
  - NFPA 2112 UL recognized component -fabric
  - IEC 61482-2 (Class1)
- Minimum Required for:
  - Welders while performing all hot work activities
  - Rig Crew

Welder jacket and apron

- Standard Compliance: EN Standard (Flame Resistance, cut, heat, abrasion resistance)
- Minimum Required for: welders

Disposable coveralls

- Standard Compliance:
  - EN 13034:2005
  - A1:2009
  - EN ISO 13982-1:2004
  - A1:2010, EN 1149-5:2008), (EN 1073-2:2002) Class 1
- Minimum Required for:
  - Personnel working in Painting /chemicals
  - Confined Space

Rain suits

- Standard Compliance: ANSI Class 3
- Minimum Required for: All personnel working outside during the Rain

Freezer jacket

- Standard Compliance: EN 342: 2, 3 Protective clothing against cool environments until - 5° C.
- Minimum Required for: All personnel entering the freezer (Catering crew/ maintenance crew)

Hand Protection

Cotton safety gloves

- Standard Compliance: N/A
- Minimum Required for: Cotton gloves for general use and routine operations

Chemical-resistant rubber gloves

- Standard Compliance:
  - EN ISO 374-1:2016/Type A AJKLOPT
  - EN ISO 374-5:2016
  - EN 388:2016 3.1.3.2.A
  - EN 407:2004 X.2.X.X.X.X
  - EN 1149:2004
- Minimum Required for: for personnel working with chemicals

Maintenance gloves

- Standard Compliance:
  - EN 420:2003
  - A1:2009 EN 420:2003
  - A1:2009; Category III
  - EN 4131A
  - EN 4231
- Minimum Required for:

- For Maintenance teams.
- Reduced strain, better ergonomics
- For safety gloves that offer breathable comfort

Roughneck / Impact gloves

- Standard Compliance:
  - ANSI/ISEA 138 Level 2
  - ANSI/ISEA 105-2016
  - EN 420:2003 + A1:2009
  - Category II EN388-4232BP
  - ANSI A2 CUT, ANSI 6 ABR
  - EN388:2016 4242AP
  - ANSI Cut Level A1, ANSI/ISEA 138
  - EN388 – 4544FP
  - EN 420:2003 + A1:2009
- Minimum Required for:
  - Drilling crew dealing with pipe handling.
  - High-performance fibers used to protect the hands from cut injuries
  - Back-of-hand TPR bumpers significantly reduce the risk of crush, pinch, and impact injuries

Anti-vibration and Technician Gloves

- Standard Compliance:
- Minimum Required for:

Mechanics and gloves

- Standard Compliance: EN 388
- Minimum Required for: Mechanical & Electrical Department

Welders thermal/hot work gloves

- Standard Compliance:
  - EN12477 Type A welding protection
  - EN ISO 21420
  - EN388:2016 +A1:2018 - 3243X
  - EN 12477 Type A, EN 407 413244
  - ANSI/ISEA 105: 2016 CUT Level A2
- Minimum Required for:
  - 14″ cow split leather welding gauntlet with a one-piece back and full cotton lining for comfort
  - Maximum EN407 burn behavior resistance
  - Ideal for welding and metal handling
  - 14″ cow split leather welding gauntlet, full cotton lining

Electrical insulation rubber gloves

- Standard Compliance:
  - Meet ANSI/ASTM D120 standard and
  - NFPA 70E for use around electrical hazards
  - and arc flash protection
  - IEC-EN 60903
  - ASTM D 120,
  - IEC EN60903
- Minimum required for: For electricians working/ dealing with high voltage.

Kitchen/chainmail gloves

- Standard Compliance:
  - EN388:2016
  - ANSI Standards
- Minimum Required for: For Catering Crew

14.4.4. Hearing & Vibration Protection

Ear plugs

- Standard Compliance:
  - 5340.002.GENRAL.1314
  - 5340.002.GENRAL.1100
  - 5340.002.GENRAL.1314
- Minimum Required for: All personnel working in noisy areas

Ear muffs

- Standard Compliance:
  - EN352-2
  - ANSI S3.19-1974
  - CSA Class Standard
- Minimum Required for: All employees working in noisy areas (noise level above 85 dB) (double protection)

14.4.5. Respiration Protection

Respirator disposable mask

- Standard Compliance: EN 143
- Minimum Required for: All personnel working with chemicals, buffering, Grinding & Sand/water Blasting

Respirator half / Full mask with cartridges and filters

- Standard Compliance:
  - EN 143
  - NIOSH
  - AS/NZS 1716:2003
- Minimum Required for: All personnel working with chemicals, buffering, Grinding & Sand/water Blasting

Self-contained Breathing Apparatus

- Standard Compliance:
  - AS1716
  - CE : EN137
  - CE : EN139
  - NFPA Department of Transportation (DOT) Transport Canada (TC)Minimum
- Required for: 30 min. Self-contained Breathing Apparatus (SCBA) is used by search and
- Rescue teams when the wearer is engaged in heavy physical work. Self-contained Breathing Apparatus components

BA Air cylinder blanking plug

- Standard Compliance:
  - AS1716
  - CE: EN137
  - CE : EN139
- Minimum Required for: ??

ELSA Set

- Standard Compliance:
  - CE : EN139
  - CE : EN402
  - AS/NZ 1716
  - EN1146:2005, ISO 23269-1:2008, ISO 23269-4:2011, SOLAS Chapter II-2
- Minimum Required for: To be used by all personnel in case of gas release emergencies

ELSA hood assembly

- Standard Compliance:
  - CE : EN139
  - CE : EN402
  - AS/NZ 1716
  - EN1146:2005, ISO 23269-1:2008, ISO 23269-4:2011,
  - SOLAS Chapter II-2
- Minimum Required for: Drager CF Saver (SE) range

Monkey board escape hood assembly

- Standard Compliance:
  - EN 403:2004
  - DIN 58647-7
  - EN 14387:2004 (only filter)
- Minimum Required for: One for each rig to be used by person working on monkey board in case of gases / H2S
- emergency

SCBA Carrying case and storage cabinet

- Standard Compliance:
  - EN 136 Class. 3, EN 137 type 2
  - DIN 58610 (MHK)
  - NIOSH (some versions)
- Minimum Required for:
  - To store and protect the breathing apparatus

14.4.6. Foot Protection

Safety Shoes

- Standard Compliance:
  - ANSI Z41.83
  - meet or exceed ASTM F2412-11 & F2413-11
  - ISO 20344
  - ISO 20345
- Minimum Required for: Personnel working in service and support sections, do not have to work in any of the areas where use of safety boots is a must (classified hazardous areas)

Safety Boot

- Standard Compliance:
  - ASTM F2413-11, M I/75 C/75, EH
  - ASTM F2413-18, M/I/C, EH PR
  - EN ISO 20345:2011
- Minimum Required for: Personnel working in the drilling, technical and deck sections

Chemical Resistant Rubber Boot

- Standard Compliance: ASTM F2413-05
- Minimum required for: For personnel working in an oil-based mud environment or involved in the mixing of the chemicals or Rig wash.

14.4.7. Fall Protection & Working at Height Tools

Full Body Harness

- Standard Compliance: ANSI Z359
- Minimum required for: For personnel working aloft (height 1.2 meters). – 4 ft.

Man-riding Harness

- Standard Compliance:
  - BS EN 813:2008 (Sit Harness)
  - BS EN 358:2018 (Work Positioning Systems)
  - BS EN 361:2002 (Full Body Harness)
  - OSHA 1910.66
  - OSHA 1926.502
- Minimum Required for: For personnel performing Man riding operations.

Derrick Harness and belt

- Standard Compliance:
  - ANSI A10.32
  - ANSI Z359.1
  - ANSI Z359.3
  - ANSI Z359.4
  - OSHA 1910.66
  - OSHA 1926.502
- Minimum Required for: All Personnel Working on Derrick /Monkey Board - Pipe Racking

Confined space rescue harness

- Standard Compliance:
  - EN 361
  - EN 362
  - ANSI A10.32
  - ANSI Z359.1
  - ANSI Z359.4
  - OSHA 1910.66
  - OSHA 1926.502
- Minimum Required for: ??

Rescue / retrieval Y-lanyard with spreader bar

- Standard Compliance:
  - ANSI Z359.3
  - OSHA 1910.66
  - OSHA 1926.502
- Minimum Required for:
  - ft. (0.6 m) rescue/retrieval Y-Lanyard
  - Keeps victim upright during rescue
  - Abrasion resistant polyester webbing
  - Built-in spreader bar
  - User friendly self locking snap hooks
  - High strength D-ring tie-off point

Lanyards & Shock Absorbers

- Standard Compliance:
  - ANSI Z359.3
  - OSHA 1910.66
  - OSHA 1926.502
- Minimum Required for:
  - ft. (0.6 m) rescue/retrieval Y-Lanyard
  - Keeps victim upright during rescue
  - Abrasion resistant polyester webbing
  - Built-in spreader bar
  - User friendly self-locking snap hooks
  - High strength D-ring tie-off point

Fall Arrestor Self Retracting Life Line

- Standard Compliance:
  - ANSI A10.32
  - ANSI Z359.1
  - ANSI Z359.14
  - OSHA 1910.66
  - OSHA 1926.502
- Minimum Required for: Self-Retracting Lifeline (SRL) incorporates a patented concept that helps separate components, such as the motor spring and brake, from foreign elements such as grease, moisture, and dirt. In addition, it features patent-pending technology that reduces retraction speed, limiting the effects of a released lifeline on the SRL and surrounding equipment

Tail Line Flex for Derrick Harness Accessories

- Standard Compliance:
  - ANSI A10.32
  - ANSI Z359.1
  - ANSI Z359.14
  - OSHA 1910.66
  - OSHA 1926.502
- Minimum Required for:
  - separates components, such as the motor spring and brake, from foreign elements such as grease, moisture, and dirt. In addition
  - features patent-pending technology that reduces retraction speed, limiting the effects of a released lifeline on the SRL and surrounding equipment

Onshore Derrick Escape Device

- Standard Compliance: ANSI/ASSE Z359.1
- Minimum Required for:
  - The Geronimo Emergency Escape Device provides the quickest and safest method of controlled descent from a derrick or tower in the event of an emergency.
  - Geronimo is carefully engineered and constructed of the finest materials. For years, it has proven itself under all conditions on oil derricks around the world

Offshore Derrick Escape Device

- Standard Compliance: ANSI, OSHA Standards
- Minimum Required for: Descent Device will get personnel down safely from high places when quick escape is vital. Either angled or sloped descent models are available to provide complete versatility and flexibility for any job site or work environment

Ladder Climbing Fall Arrest System

- Standard Compliance: ANSI A14.3-1992, ANSI Z359.16
- Minimum Required for:
  - He Lad Saf™ flexible cable system consists of a top and bottom bracket that act as anchors for a steel cable that runs the length of the climbing area.
  - A Lad Saf™ X3 sleeve connects the worker to the system, automatically follows the user during the climb and locks onto the cable in the event of a fall, allowing the user to regain their footing.

Derrick Ladder Climbing Assist Fall Arrest System “Counterweight Climb Assist”

- Standard Compliance:
  - ANSI Z359.1-2007 Requirement
  - OSHA 1910.66
  - OSHA 1926.502
- Minimum Required for: DBI SALA® SSB Climb Assist System, with external counterweight, aids workers and provides fall protection while climbing lengthy ladders and towers.

It's ideal for use on land based and offshore drilling platforms, where environmental and work conditions can make climbing ladders hazardous.

Rescue at Height Kit

- Standard Compliance: Various EN Approvals
- Minimum Required for: Rescue Pack delivers a mechanical advantage for a lifting of around 3:1 by the use of the stainless-steel HURRICANE. The rope device can pay rope out but lock when a load is applied. The hook can attach to D ring or harness shoulder strap if needed.

Rescue at Height Kit Components

- Standard Compliance:
- Minimum Required for:

Suspension Trauma Safety Straps

- Standard Compliance:
  - ANSI
  - OSHA Requirements
- Minimum Required for:
  - All Personnel Working at height above 1.2 m (4 ft.)
  - Relief straps are used to relieve pressure and improve circulation in the legs and hips of a worker who is suspended in a safety harness while he or she awaits rescue after a fall.

Working at Height Tool Kit & components

- Standard Compliance: EN Approved
- Minimum Required for:
  - Tested & Certified Lanyards.
  - Tools are tested to a 5 meter drop.
  - Tools are also tested to destruction.
  - We determine safe working load practices.

Working at Height Tools bags

- Standard Compliance: N/A
- Minimum Required for:
  - Stop drop Tooling Waist and Shoulder Bags for working at height.
  - Stop drop Tooling Waist and Shoulder Bags with adjustable strap for working at height. Black & Yellow bags with Stop drop Tooling logo

Scaffolder Working at Height Tool Bag & Tools belt

- Standard Compliance: OSHA Requirements
- Minimum Required for:
  - The Stopdrop Tooling Scaffolding Tool Kit Belt includes a: Scaffolding Wrench, Ratchet Podger, Spirit Level, 5M Tape Measure and Claw Hammer. All of the Tools come with appropriate Belt attachment points and 1M Black Coil Lanyards.
  - Stopdrop Tooling Scaffolders Tool Belt Pouch for working at height.
  - Stopdrop Tooling Scaffolders Tool Belt Pouch with adjustable rear loops for tool belt for working at height.
  - Interior velcro divider
  - 4 interior locking carabiners
  - Interior pockets

Rebel Self-Retracting lifeline

- Standard Compliance:
  - ANSI A10.32
  - ANSI Z359.14
  - OSHA 1910.66
  - OSHA 1926.502

- Minimum Required for:
  - Is designed to be a component in a personal fall arrest system.
  - helpful during working on top of mast while disconnecting mast sections and there is no WAH platform or similar activities

Tie-off adaptor

- Standard Compliance:
  - ANSI Z359.18
  - OSHA 1926.502
  - OSHA 1910.140
- Minimum Required for: Designed for use by person (only one) no more than 141 kg.

Roll Clamp Fall Arrest Beam Anchorage Point

- Standard Compliance: Complies with standard EN795 class B
- Minimum Required for:
  - The Roll Clamp mobile anchorage device meets the requirements of construction workers who want to be able to work safely while retaining considerable freedom of movement.
  - On its 4 rollers the Roll Clamp follows the construction worker as he moves on the structure, with minimum action required from the worker.
  - There are two models, according to the "H" type metal section on which it is used: 380 mm or 640 mm max. Adjustment range from 120 mm to 640 mm according to the width of the flange.

Sliding beam anchor

- Standard Compliance:
  - ANSI Z359.18
  - OSHA 1910.140, 1926.502 Anchorage Connector standard
  - ANSI A10.32
  - EN795
  - OSHA
  - Z359.1
- Minimum Required for: Anchorage connectors are the unsung heroes of most fall protection systems, often overlooked but critical components because they securely attach your system to the anchorage

14.4.8. Fire Safety Equipment

Firefighter Outfit / Suit

- Standard Compliance:
  - EN469-2005
  - 96/98/EC
  - SOLAS
  - Marine Fire Suit, SOLAS/MED, EN469,
  - PS6573 EN 469:2005+A1:2006 Protective clothing for firefighters
  - EN 367
  - ISO 6942
  - EN 20811
  - EN/ISO 11092
  - NFPA 1971:2018
- Minimum Required for:
  - Fire Team Member/ Leader
  - Insulated for extra protection against radiant heat
  - Reflective trim
  - Radio and box pockets
  - Removable knee pads
  - Adjustable braces in the pants

Firefighter gloves

- Standard Compliance:
  - EN659
  - 96/98/EC SOLAS
  - NFPA 1971-2013
- Minimum Required for: Fire Team Member/ Leader

Firefighter helmet

- Standard Compliance:
  - NFPA 1971-2013
  - Approved according to EN443 and SOLAS/MED
  - NFPA 1971-2018
  - GA44:2015
- Minimum Required for: Fire Team Member/ Leader

Firefighter helmet visor

- Standard Compliance: NFPA 1971 -2013
- Minimum Required for: Fire Team Member/ Leader

Firefighter helmet chin strap

- Standard Compliance:
  - Certified to NFPA 1971-2018
  - NFPA 1951-2013 to work on MSA Cairns® Fire Helmets
- Minimum Required for: Fire Team Member/ Leader

Fire-fighter hood

- Standard Compliance: EN 13911
- Minimum Required for: Fire Team Member/ Leader

Firefighter Helmet Neck Cover

- Standard Compliance: EN 443
- Minimum Required for: Fire Team Member/ Leader

Firefighter boot

- Standard Compliance:
  - EN345-2
  - SOLAS/ MED
  - EN 15090:2012
  - EN ISO 20345:2011
  - EN 50321:1999
  - SOLAS/MED
  - NFPA 1971-2013
- Minimum Required for: Fire Team Member/ Leader

Firefighter Life Line

- Standard Compliance: MED type approved according to SOLAS 74/2009 convention
- Minimum Required for: Fire fighter life line, with hook

Firefighting Axe

- Standard Compliance:
  - Axe approved according to the FSS Code
  - This product meets or exceeds ASME B107.400-2008
- Minimum Required for: Long fireman's axe , 90CM, high voltage for escaping purpose

Portable Fire Extinguisher Dry Chemical Powder

- Standard Compliance: EN3 - 10 item 5.4
- Minimum Required for: Distribution of extinguisher as per rig lay out

Portable Fire Extinguisher CO2

- Standard Compliance: EN3
- Minimum Required for: Distribution of extinguisher location as per rig lay out

Portable Fire Extinguisher Foam

- Standard Compliance: EN3
- Minimum Required for: Distribution of extinguisher location as per rig lay out

Fire extinguisher inspection tags

- Standard Compliance: N/A
- Minimum Required for: To state the inspection date

Fire extinguishers box –Cover

- Standard Compliance: N/A
- Minimum Required for: all fire extinguishers

Water Fire Station

- Standard Compliance:
  - DIN 50049
  - EN 10204
  - EN 10130
- Minimum Required for: Distribution of extinguisher as per rig lay out.

Fire Hoses

- Standard Compliance: Bavaria Standard fire hose is manufacturer and tested according to European Standard DIN 50049
- Minimum Required for: Highly abrasion resistant Flat nylon hose with internal rubber lining 64 mm (2½ inch) of 30 m Equipped with instantaneous coupling

Fire tap

- Standard Compliance: DIN 14461-3
- Minimum Required for: Landing Valves (fire valves) with 30° Outlet - For hose diameter 64 mm (2 ½ inch) / 38 mm (1½ inch)

Fire Blanket

- Standard Compliance: certified to BS EN 1869
- Minimum Required for: Distribution of extinguisher location as per rig lay out

14.4.9. Confined space entry and gas detection equipment

Portable Multi Gas Detectors

- Standard Compliance: CE Approved
- Minimum Required for: Drilling / Workover Rig Requirement: One each MGD to be available onboard all the time considering the calibration time

Portable Multi Gas Detectors replacement battery

- Standard Compliance: CE Approved
- Minimum Required for: Multi-Gas Detector Battery Pack, Rechargeable, Lithium-Ion, Portable Gas Monitor Battery Replacement, Durable, Handheld, Easy to Install.

Portable Multi Gas Detectors single & multi charger

- Standard Compliance: (IEC) 61000-4-3
- Minimum Required for: N/A

Portable Multi Gas Detectors sampling hose / line

- Standard Compliance: N/A
- Minimum Required for: straight Wand, Air Line, Quality Tester, Durable & Reusable Line, Safety

Diagnostic Tool, Rechargeable Battery Operated (Gas Detector Accessory)

Single Gas Detectors

- Standard Compliance: EN 5612-15
- Minimum Required for: All Personnel Working in Job has Gas Release Hazard

CSR TRIPOD With Manual Winch

- Standard Compliance:
  - ANSI Z117.1
  - ANSI Z117.1-1995
  - OSHA 1910.146
  - OSHA 1910.66
  - OSHA 1926.502
- Minimum Required for:
  - Complete rescue system including tripod and Salalift II winch.
  - Winch features 60′ of 1/4′ galvanized steel cable.
  - UL classified 7′ aluminum tripod (8000000).
  - Designed for durability and lightweight, easy to set-up and transport.
  - Complete with quick mount bracket for Salalift II winch attachment.
  - Rated working load is 350 lbs for work support and 310 lbs for fall arrest.
  - Designed for raising, lowering, work support or personnel rescue
  - Lightweight design for ease of use.
  - Durable corrosion-resistant construction featuring anodized aluminum side plates, zinc-plated gears and shafts, stainless steel springs and aluminum drum for superior corrosion resistance.
  - Overload clutch reduces chance of injury to entangled worker

Confined space rescue stretcher

- Standard Compliance: OSHA Requirement
- Minimum Required for:
  - The stretcher is fabricated from a special plastic formula that is both flexible and durable.
  - Securing straps with steel buckles are sewn into the stretcher through brass grommets, which contribute to the strength and durability.
  - Revolutionary design.
  - Durable and easy to use.
  - With Cordura backpack storage.

Confined space rescue dummy

- Standard Compliance: N/A
- Minimum Required for: Lifetec General Purpose dummies are suitable for common land rescue scenarios such as height, confined space, USAR, road accident and general handling exercises

14.4.10. Lockout Tag-out & Electrical Hazard equipment

Standard Five Lock Station

- Standard Compliance: N/A
- Minimum Required for: Suitable for SCR & VFD room

Standard Ten Lock Station

- Standard Compliance: N/A
- Minimum Required for:
  - Suitable for SCR & VFD room.
  - Patented insulated key chamber protects workers from shocks when key is inserted.
  - Superior temperature, chemical and corrosion resistance.
  - Special 6-pin cylinder resists tampering and offers more unique key cuts.
  - Ships with 1 key and labels.

Ball Valve Lockout

- Standard Compliance: N/A
- Minimum Required for:
  - Easy to use, single-piece design locks quarter-turn ball valves in OFF position.
  - Two sizes fit most valves up to 3".
  - 65692, 65669 and 65693 are made of powder-coated steel.
  - 65666 are made of super-tough nylon (service temp -40° to 248° F).
  - Prizing Ball Valve Lockouts made from ultra-tuff polypropylene

Gate Valve Lockout

- Standard Compliance: N/A
- Minimum Required for:
  - Made of rugged injection-molded polypropylene
  - Service temperatures from –25°F to 200°F
  - Unique knockout center accommodates OS&Y or "rising stem" valves
  - Accepts locks with shackles up to 3/8" in diameter

Butterfly Valve / Universal Valve Lockout

- Standard Compliance:
  - OSHA 29 CFR 1910.147 ©(4)(ii)(A)(1)/(c) (5)(ii)(C)(1) ,
  - ANSI standard Z244
- Minimum Required for:
- Made of industrial-grade steel and nylon
- Small UVLO: for use on handle widths up to 1" (max handle thickness of 0.6")
- Large UVLO: for use on handle widths up to 1.6" (max handle thickness of 1.1")

Single Pole Circuit Breaker Lockouts

- Standard Compliance:
- Minimum Required for:
  - Works on a wide range of single-pole and internal-trip multi-pole breakers.
  - Made of rugged polypropylene and impact-modified nylon.
  - Use thumbscrew to clamp lockout securely onto switch tongue, then pull cover.
  - Over thumbscrew and lock in place to prevent clamp from being loosened

Electrical Plug Lockouts

- Standard Compliance: OSHA compliant
- Minimum Required for:
  - For high & low-voltage plugs up to 3" in diameter and 51/2" in length
  - 2 sliding top lids can be used individually or together to accommodate small, medium and large-diameter cords up to 11/4"

All Purpose Cable Lockout

- Standard Compliance: OSHA compliant
- Minimum Required for:
  - Superior chemical, corrosion and temperature resistance properties
  - Nonconductive nylon cable (1/8" diameter)
  - Sheathed metal cable (3/16" diameter, vinyl coating)
  - Max. Service temperature of cables:
  - Sheathed Metal: -30° to 180° FNon-Conductive Nylon: -40° to 200° F

Push buttons Lockout

- Standard Compliance: OSHA compliant
- Minimum Required for:
  - Safety Covers quickly and efficiently secure facility production and operating equipment at the point of need
  - Includes a permanently mounted base and a removable cover

Energy Source Lockout-Tagout Tags

- Standard Compliance: N/A
- Minimum Required for: Danger sign /tag

Steel Group Lockout Hasps

- Standard Compliance: Directive 2011/65/EU and 2015/863
- Minimum Required for:
  - Hasps are constructed of vinyl-coated high tensile steel with rust-resistant plating
  - Hasps allow multiple padlocks to secure a single lockout device
  - Equipping your employees with the proper lockout tools and warning devices can save lives, reduce lost employee time, and cut insurance costs

Lockout Padlocks

- Standard Compliance: OSHA requirements
- Minimum Required for:
  - Padlocks feature lightweight, nonconductive fiberglass-reinforced nylon bodies, hardened steel shackles and tamper-resistant 6-pin cylinders
  - These lightweight padlocks comply with all OSHA requirements and offer superior temperature, chemical and corrosion resistance
  - Non-conductive nylon padlocks are a safer alternative to metal locks for lockout applications
  - Reserved, paracentric keyway provides optimal security and the special design prevents the key from being released until the padlock shackle is closed

Electrical Hazard Rescue Hook

- Standard Compliance: ASTM F711
- Minimum Required for: This insulated, heat-treated rescue hook features a closed-cell, foam-filled tubular fiberglass reinforced handle

14.4.11. Offshore Safety Equipment

Life Jackets

- Standard Compliance:
  - SOLAS, USCG, Transport Canada
  - SOLAS 74, as amended, Regulation III/4 and 34
  - The LSA Code, Regulations I/1.2 and II/2.2 IMO Resolution MSC.81(70), Part 1, MSC 200(80), MSC 207(81)
- Minimum Required for:
  - As per personnel on board
  - All Personnel wear Life presevers in emergency
  - Permanently stored

Life jackets lights

- Standard Compliance:
  - Exceeds the IMO SOLAS regualtions
  - Min. standard: 0.75cd output
  - Min. standard: 8-hour duration Low profile, compact
  - Easily fitted
- Minimum Required for:
  - Exceeds the IMO SOLAS regualtions
  - Min. standard: 0.75cd output
  - Min. standard: 8-hour duration
  - Low profile, compact
  - Easily fitted

Inflatable life jackets

- Standard Compliance: SOLAS and UK Department of Transport Marine Directorate
- Minimum Required for: Fast rescue craft team and Personnel boarding the chopper

HLO & Banksman vest

- Standard Compliance: EN Approved
- Minimum Required for:
  - Helicopter Landing Officer (HLO)
  - Banks man

Lifebuoys

- Standard Compliance:
  - Life-Saving Appliance. 2nd ed. IMO. 2010. Ch II. Personal life-saving appliances. Item 2.1. Lifebuoys P 9
  - USCG Approved Type IV
- Minimum Required for: Rig Requirement As per rig safety plan

Man-overboard dummy

- Standard Compliance: N/A
- Minimum Required for: The Lifetec Water Rescue Dummy perfectly simulates an unconscious casualty in water

14.4.12. Health and Occupational Protection Related Equipment

Basket Stretcher

- Standard Compliance: Council Directive 93/42/EED , ISO 13485
- Minimum Required for:
- Bridle ends are adjustable for ideal patient positioning
- Includes 4 locking steel carabineers for attachment to lifting points
- The carabineers' welded-in retaining bar prevents separation from bridle webbing

Adjustable lifting bridal

- Standard Compliance: Council Directive 93/42/EED , ISO 13485
- Minimum Required for:
  - Bridle ends are adjustable for ideal patient positioning
  - Includes 4 locking steel carabineers for attachment to lifting points
  - The carabineers' welded-in retaining bar prevents separation from bridle webbing

Pole Stretcher

- Standard Compliance: FDA
- Minimum Required for:
  - removable stretcher, can use independently
  - lightweight aluminum frame
  - The fabric is waterproof, anti-cracking and easy to clean

Backboard stretcher

- Standard Compliance:
  - EN 1789
  - EN 1865
  - AS/NZS-4535:1999
  - IP56, SAE J3027
  - KKK-A-1822
  - IEC 60601-1
  - NFPA-1917
  - CAAS GVS v. 1.0
  - RoHS-2
  - CE
- Minimum Required for: Designed and constructed for both horizontal and vertical casualty evacuations

Traverse / Vertical rescue stretcher

- Standard Compliance:
  - EN 1789
  - EN 1865
  - AS/NZS-4535:1999
  - IP56, SAE J3027
  - KKK-A-1822
  - IEC 60601-1
  - NFPA-1917
  - CAAS GVS v. 1.0
  - RoHS-2
  - CE
- Minimum Required for: Designed and constructed for both horizontal and vertical casualty evacuations

Stretcher cover

- Standard Compliance: N/A
- Minimum Required for: It is made from lightweight, coated nylon the cover contains a dual zip that opens from both ends to access patient or equipment. The cover can be rolled or folded and stuffed into its self-contained storage pouch, which could be attached to the stretcher with the integral Velcro attachment straps.

Stretcher strap

- Standard Compliance: N/A
- Minimum Required for: Stretcher Strap

14.4.13. Hands-free tools and lifting Aids

Radiation Survey meter / Norm meter

- Standard Compliance: CE Approved
- Minimum Required for: The instrument measures alpha, beta, gamma, and X-rays. Its digital display offers selectable counts per minute (CPM), mR/hr) or accumulated counts

Digital anemometer "Wind speed meter"

- Standard Compliance: N/A
- Minimum Required for:
  - Simultaneous display of Ambient Temperature and Air Flow or Air Velocity
  - Up to 8 easy to set Area dimensions (ft^2 or cm^2) are stored in the meter's internal memory
  - 3% velocity accuracy via low friction 2.83"D (72mm)

Analog anemometer "Wind speed meter"

- Standard Compliance: N/A
- Minimum Required for: Anemometer "ANEMO" (Hand-Held) with measuring ranges: 0 - 120 km/h, 0 - 12 Beaufort, 0 - 35 m/sec, 0 - 70 knots

Barricading caution tapes

- Standard Compliance: N/A
- Minimum Required for:
  - Yellow tape is bright and noticeable
  - 3 inch wide tape with large, bold 2 inch letters
  - Thick, durable poly stands up to wear and tear
  - Rolls are individually labeled with UPC code

14.4.14. Environmental equipment

Spill Kit

- Standard Compliance: OSHA Requirement
- Minimum Required for:
  - Keep your spill Kits full
  - Restock without buying a whole new kit
  - Contains all component of original kit

Spill kit container

- Standard Compliance: 40 CFR 112.7, 40 CFR 122.26
- Minimum Required for:
  - Oil-Only Spill Kit in Cart features swing-out front doors that make it easy to get to the supplies you need quickly.
  - The swing-out doors, prepacked shelves and compartments, make cart easy to inventory and access. 8 in

14.5. PPE Matrix

	Goggles	Welder Goggles	Cotton Gloves	Rubber Gloves	Welder Gloves	Electric Resistant Gloves	Mech. Gloves	Impact Gloves	Face Shield	Welder Face Shield	Apron	Disposable Coverall	Safety Harness	Dust Mask	SCBA	Rubber Boot	Ear Plugs
Welding, Cutting or Brazing		✓			✓					✓							
Confined Space Entry	✓			✓							✓		✓			✓	
Man Riding								✓					✓				
Man Basket								✓					✓				
Work at Height								✓					✓				
Pressure Testing	✓							✓									
Electrical Work						✓											
Mechanical Work							✓										
Working with Chemicals / Oil	✓			✓					✓		✓	✓		✓		✓	
Tubular Handling								✓									
Grinding, Drilling or Hammering	✓							✓	✓								
Painting				✓								✓			✓		
Environmental Conditions																	
Painting	✓		✓								✓			✓			
Noisy Area																	✓
Fumes	✓														✓		
Dust														✓			
Toxic Area	✓														✓		
Hazard Chemicals	✓			✓							✓	✓		✓		✓	

B15. Gas Detection System

EGPC

15.1. Scope

The gas testing procedure applies to all workplaces where there is a potential for exposure to hazardous gases.

15.2. Purpose

The gas testing procedure is designed to identify and assess the potential hazards from hazardous gases in the workplace. It is intended to protect workers from exposure to harmful gases that can cause serious health hazards/rescueding respiratory illness, cancer, and even death. The procedure outlines the steps to be taken to identify, monitor, and control hazardous gases in the workplace.

15.3. Definitions

15.3.1. Competent Gas Tester:

Any person who has been adequately trained and has working knowledge and experience of instruments and equipment being used in gas testing, and is full aware of the working area associated hazards/rescue from confined space in addition to knowing his limit and when to stop and ask for assistance.

15.3.2. Confined Space:

A location that has one or more of the following characteristics:

- Not large enough or has an internal configuration such that can enter and perform assigned work or could be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section.
- Is not designed/intended for continuous human occupancy.
- By design, has limited openings for entry and exit.
- Unfavorable natural ventilation.
- Contains, or has a potential to contain, hazardous atmosphere such as exposure to flammable, toxic, oxygen deficient, hot or humid atmosphere or any combination of it.
- Contains a material that has the potential for engulfing the entrant.
- Examples include but are not limited to the following:
- Tanks, vessels, storage bins, hoppers, vaults, pits, manholes, and ports, including any piping large enough to enter.
- Pits, dikes, or ditches more than 5-feet deep that require personnel to work with their heads below the rim.

Some spaces that are not normally considered to be confined spaces can become so due to a change in the conditions within the space.

15.3.3. Hazardous Atmosphere:

An atmosphere which exposes person or persons to a risk of death, incapacitation, injury, or acute illness from one or more of the following;

- Flammable gas, vapors or mist in excess of 10% of its lower flammable limit (LFL).
- An atmospheric oxygen concentration of below 19.5 percent or above 23 percent.
- Any atmospheric condition recognized as immediately dangerous to life or health

15.3.4. Hot Work

Any work being conducted that will produce any heat, sparks or fire that may increase the risk of fire or an explosion. Hot work consists of, but is not limited to, welding, thermal cutting, grinding and heating

15.3.5. Lower Explosive Limit (LEL)

Lowest concentration (percentage) of a gas or a vapor in air capable of producing a flash of fire in presence of an ignition source (arc, flame, heat). At a concentration in air below the LEL there is not enough fuel to continue an explosion.

15.3.6. Lower Flammable Limit (LFL)

Lower end of the concentration range of a flammable solvent at a given temperature and pressure for which air/vapor mixtures can ignite.

15.3.7. Upper Explosive Limit (UEL)

Highest concentration (percentage) of a gas or a vapor in air capable of producing a flash of fire in presence of an ignition source (arc, flame, heat). Concentration higher than UFL or UEL are "too rich" to burn.

15.3.8. Upper Flammable Limit (UFL)

Upper end of the concentration range of a flammable solvent at a given temperature and pressure for which air/vapor mixtures can ignite

15.3.9. Oxygen Deficient Atmosphere

An atmosphere containing less than 19.5% oxygen by volume.

15.3.10. Oxygen Enriched Atmosphere

An atmosphere containing more than 23% oxygen by volume.

15.3.11. Airborne concentration

The mass of particulate substances or fibers, or the vapor percentage of dissolved pollutants in a specific volume of air. As the concentration increases, the risk of inhalational exposure rises.

15.3.12. Permissible Exposure Limit (PEL)

Is the maximum amount or airborne concentration of a substance to which a worker may be legally exposed. Most PELs have been defined for substances that are dangerous when inhaled, but some are for substances that are dangerous when absorbed through the skin or eyes. A PEL may be defined in either of two ways; a Time Weighted Average (TWA) concentration. This average concentration must not be exceeded during any 8 hr. work shift of a 40 hr. workweek. Or, a ceiling value, which must not be exceeded at any time during the workday.

15.3.13. Threshold limit value (TLV)

The concentration in air to which it is believed that most workers can be exposed daily without an adverse effect (i.e., effectively, the threshold between safe and dangerous concentrations). The values are time-weighted concentrations (TWA) for a 8 hr. workday and 40 hr. workweek, and thus are related to chronic effects. A short-term exposure limit (STEL) is defined as a 15 min. TWA exposure, which should not be exceeded at any time during a workday even if the 8 hr. TWA is within the TLV-TWA.

15.3.14. Time-weighted average (TWA)

A method of calculating a worker's daily exposure to hazardous substances such as dust, fumes, chemicals, gases, or vapors. It is averaged to an 8-hour workday or 40-hour week, along with the average levels of exposure to the hazardous substance and the time spent in that area. TWA for H_2S is 10 PPM.

15.3.15. Short term exposure limit (STEL)

A 15 minute TWA exposure that should not be exceeded at any time during a workday. STEL for H_2S is 15 PPM.

15.3.16. Continuous Gas Testing

A process whereby the required gas tests are continuously monitored. Continuous monitoring is normally required where there is a high likelihood of changing gas concentrations and / or there is a high risk to workers if the gas concentration changes unexpectedly.

15.3.17. Gas Free

A tank or confined space that has a Zero reading for harmful, toxic and explosive gases when tested.

15.4. Responsibilities

15.4.1. OIM/PIC and relevant Section Leader (Applicant) shall ensure that

Nominating competent Gas Testers, and ensure that all personnel follows the rules outlined in this procedure.

15.4.2. Work group supervisor

- Verify any requirement for gas testing related to the Work Permit.
- Ensure that gas testing is carried out where appropriate by Competent Gas Testers, prior to issue of a Work Permit, and that the results are recorded on the permit.

15.4.3. Competent Gas Tester

- Assess atmospheric hazards inherent in the confined space, i.e. organic vapours, toxic or oxygen deficient atmospheres etc. using the applicable calibrated instruments.
- Assess work to be performed inside the confined space to evaluate atmospheric hazards that may be introduced into the confined space as a result of work activity.
- Based on the above assessments identify PPE required for entry, ventilation requirements.
- Perform gas test of confined space, record readings on permit and signs as competent gas tester in the entry permit.
- As an competent gas tester, states on the Work Permit how long the test is valid for before a new gas test is required.

15.5. Procedure

- Gas Testing is carried out by a competent gas tester to check whether it is safe to carry out, or continue with certain activities, ensuring that people and plant are not placed at risk by potentially dangerous gas concentrations during the activity. This procedure indicates the requirements for Gas Testing to acceptable Gas Test Standards.
- Gas Testing shall be carried out as part of, and in accordance with, the requirements of Permit to Work Procedure and Entry into Confined Spaces Procedure. Moreover, all appropriate PPE should be worn by the gas tester during the gas tests.
- Appropriate arrangements must be in place for the control and use of all gas testing instruments.

15.5.1. Precautions for Gas Testing:

- Follow the manufacturers' supplied literature before operating the instrument.
- Avoid exposing the gas detection instrument to chemicals or substances that may poison the sensors or detectors. Refer to manufacturer's literature for examples of such poisons or chemicals.
- Only use manufacturer approved accessories with your instrument as incorrect accessories can harm the operation of the instrument.
- Portable multi gas detector that is shared among multiple users should be disinfected / cleaned before using. In order to minimize the risk of sensors' damage or malfunction, disinfecting / cleaning the device must be in accordance with manufacturer's recommendation.

15.5.2. Test the Atmosphere inside the Permitted Space

- Initial testing should be carried out by a competent gas who will issue a certificate stating whether the space is 'safe for man' and/or work, and if any special conditions are to be observed. Ventilation should be stopped about 10 minutes before tests are made and not restarted until the tests are completed.
- A continuous gas monitoring has to be carried out by competent gas tester to check the atmospheric conditions inside the confined space with calibrated gas detection device. And record

it in the Gas Testing Readings Log form at least every one hour.

15.5.2.1. Measuring must cover the:

- Top of the plant to measure the Methane gas level and Carbon Monoxide (CO).
- Middle of the plant to measure the oxygen level
- Bottom of the plant to measure the H2S level.

15.5.3. Location of Gas Testing

- Gas tests shall be carried out at different intervals and record the results of the gas testing so that they provide a representative indication of the conditions inside the vessel or pipework or other confined spaces or in the surrounding area of worksite. For vessels the vapor space shall be sampled (From outside the vessel) at several levels and positions inside the vessel.
- Where pipework is to be broken, the contents of the pipe shall be tested from a sampling point as near to the break-in point as possible, or from sampling points on either side of the break-in point. If this is not possible, the contents of the pipe can be sampled by breaking the flange and testing at the break-in point before complete dismantling.
- Where Hot Work is to be carried, the worksite and adjacent area must be tested together with possible sources of gas leak in the surrounding area and in particular those upwind of the worksite.
- Where H_2S could be present, it is essential to sample as close to the bottom of the vessel as possible

15.5.4. Types of Gas Tests

Testing for oxygen (O2)	Testing for flamma-ble atmosphere	Testing for H2S	Testing for Carbon Monoxide (CO)
Prior to entry, verify that the O2 level is between 19.5% and 23%. If the O2 level is less than 20%, entry is permitted only while continuously wearing an atmosphere-supplying respirator. If the O2 level is above 23%, no entry is permitted.	A space with an atmosphere with more than 0% of the "Lower Flammable Limit" (LFL) or "Lower Explosive Limit" (LEL), on a combustible gas indicator should not be entered.	H2S are measured in parts per million (PPM). A space with an atmosphere with more than 0 ppm must not be entered.	Carbon monoxide (CO) gas testing shall be conducted for all confined space entry activities. The concentration shall be less than 35 PPM.

15.5.5. Requirements for Gas Testing

Gas Testing will always be required for any of the following:

- Preparation of confined space entry.
- Before and during entry into confined spaces
- Before all hot work in hazardous areas, and thereafter, as specified on the work permit.
- Before all cold work in hazardous areas, and thereafter, as specified on the work permit.
- As specified on any other Work Permits.
- A potential ignition source contacting a flammable or explosive atmosphere.
- Where there is a potential for a reduction or increase of oxygen in a breathable atmosphere.
- Where there is a potential for a toxic atmosphere.

B16. Transportation safety requirements

EGPC

16.1. Scope

This procedure applied on all EGPC affiliated vehicles. It ensures

16.2. Purpose

Transportation and road safety rules and the following instructions are issued to provide guidelines for all users Rig contractors/operators transportation units and Persons in Charge (PIC) of Rigs, Bases etc. who supervise operations of these units.

16.3. Responsibility

16.3.1. Top management

Rig operators and contractors are responsible for ensuring the implementation and activation of this procedure.

16.3.2. Driver

- Responsible for the safety of both passengers and vehicles.
- Responsible for implementing pre-trip checklist on vehicle before starting the trip.
- Responsible for ensuring JMS form is correctly filled in and that all Passengers' names are listed.

16.3.3. The transportation manager

Ensures procedure is understood and implemented at all work locations. He monitors the implementation and proposes revisions and/or corrective actions when required.

16.4. Procedure

16.4.1. Driving Safety Precautions

- Rig contractor shall ensure that Traffic law is followed at all times (i.e. speed limits, licenses, and vehicle
- Condition and road signs).
- Journey Management System is implemented and followed.
- Headlights should be used at any time when vision quality is not optimum
- Driver's medication has to be approved by Medical specialist.
- Driver shall not exceed (road / desert) speed limit.
- Using mobile phones while driving is prohibited.
- Seat belts are installed and fastened by all occupants.
- It is prohibited to pick up hitchhikers without permission.
- Daily driving distance for drivers doesn't exceed 9 hours, and continuous driving doesn't exceed 3 hours.
- The distance from the front vehicle while driving should be 3 driving seconds in normal road & weather conditions, and to be 6 seconds in low vision (fog, rains… etc.)
- Smoking is not allowed inside EGPC vehicles.
- Driver has a valid defensive drive certificate.
- Drivers are subjected to a random drug test.
- Light vehicles are to be checked daily by using pre-trip checklist.

16.4.2. Night Driving

Due to the increased driving hazards at night, EGPC has implemented restrictions on driving during nighttime hours, limiting it to a minimum. It is only limited to business-critical activities only considered by the organization's Operations and HSE Managers

As night driving increases risks in driving, the following minimum controls shall be in place:

- Night drive checklist shall be done by STP/PIC and to be attached with the journey plan.

- Night drive within the same concession without crossing highways/public roads; the Superintendent's approval is required.
- Infield crew change; senior tool pusher's approval is required.
- Night drive between different concessions & on public roads; organization's Operations and HSE Manager's approval is required.
- Ambulance movement; Superintendent /senior tool pusher's approval is required.

16.4.3. Convoy Safety Precautions

- Rig Contractor shall ensure two truck pushers escorted at least in the following cases:
  - For the wide loads even if it's only one.
  - If loaded trucks in rig move pass below a bridge or electrical overhead transmission lines.
  - If the convoy passes on public roads.
  - If number of vehicles moving together exceeds 10 vehicles.
- Precautions:
  - The truck pusher:
  - Brief all drivers and participants in the morning meeting on convoy safety procedures, stating hazards and precautions.
  - During the convoy's journey, the truck pusher plays a crucial role in ensuring safety. They prevent any vehicle from passing when the convoy is crossing intersections. Moreover, the truck pusher leads the convoy by driving in front of it and providing proper instructions to the truck drivers.
  - The maximum height and width of the road, regarding to road survey should be considered.
  - Number of trucks in one convoy shall not exceed 20 trucks, excluding the convoy lead vehicle and convoy tail vehicle.
  - Wide loads edges are to be covered with reflection tapes (The reflection tapes are provided by rigs).
  - Orange/yellow revolving light or strobe light is installed in the convoy's front truck, if available.
  - Escorts have an agreed method of communication between each other.
  - While travelling in convoy, the speed of the convoy vehicles is to be adapted to the prevailing road conditions, legal speed limit, and road speed limit.
  - Safe distance is to be maintained between trucks, distance should be 5 driving seconds from the front vehicle.

16.4.4. Poor Visibility Precautions

Rig contractors shall ensure that all employees aware by the driving procedures in case of poor visibility (e.g. sandstorms, heavy rains, unclear visibility etc.):

- Ensure the trip is necessary; Reduce vehicles movement.
- Before the trip inspect the vehicle, as per EGPC compliance checklist, and ensure all light signals, water of windshield wipers and wipers are working efficiently.
- Ensure the driver is approved; driver's documentation are valid (Defensive
- Drive training, Driving license, and medical checkup).
- Prepare a journey plan for the trip and contingency plan in case of inability to complete the journey in the middle of the road.
- Don't speed up & keep safe distance with the front vehicle. Leave 6 seconds with the front vehicle & if you can't make it pull over in a safe place.
- STOP in case of heavy fog and poor visibility stop in a safe place, turning on your flash light/ waiting signals alerts other drivers of your vehicle's location.

16.4.5. Desert Lost Man Survival

Each rig contractor shall ensure that all drivers and employees are familiar with guidelines to be followed in case lost in desert

- Call trip manager to inform him with the situation
- If you get lost, stop immediately. Try to locate your bearings, and do not resume until you are sure of where you are going. (The best policy is to backtrack until you know where you are.)

- Means of signaling include the headlights, which should only be used if you see another vehicle.
- Use food and water carefully.
- If realized you are completely lost, do not leave your vehicle.

16.4.6. Journey Management System

16.4.6.1. JMS form to be issued for

- Cairo-assigned vehicles conducting field trips.
- Cairo & field assigned vehicles conducting trips 50 Km (+).
- Rig-assigned vehicles conducting trips outside the rig's operations area.
- Rig move convoys (between rigs locations when passing a high way/public road.)
- Regular weekly supply trucks and contractor's vehicles conducting field trips.
- All inter-cities trips.
- JMS to be filled in at the departure point (origin point), kept with the vehicle driver and completed upon arrival at destination by the designated Person in Charge (PIC).

For further requirements refer to EGPC safe transportation guidelines.

B17. HAZCOM

EGPC

17.1. Scope

This procedure sets out practical step-by-step instructions for managing the potential hazards of chemicals and appropriate protective measures to employees.

17.2. Purpose

The purpose of a Hazard Communication (HazCom) is to ensure that employees are aware of the hazards of chemicals in the workplace and are provided information regarding the potential hazards associated with exposure to these chemicals.

17.3. Definitions

17.3.1. HazCom

Means "Hazard Communication" which works to keep people safe by providing information about potential sources of injury — specifically, hazardous chemicals in the workplace.

17.4. Responsibility

17.4.1. The rig contractor's HSE engineer

- Shall review and maintain any safety data sheets of hazardous chemicals, and ensure that they are readily accessible to employees (SDS)
- Provide safe work environment and the implementation of this procedure
- Ensure that employees are provided the required information and training on the chemicals handling hazard and required controls.
- Determine the required PPE, ensure its availability and that employees are properly trained how to use of that equipment.
- Assure that all hazardous chemicals that enter or leave the workplace are properly labeled, tagged or marked.
- Develop safe instructions / SJA for chemical handling.

17.5. Procedure

17.5.1. Chemical inventory

To comply with HazCom standards, companies that work with hazardous materials create a list of all chemicals they use in their work and organize it in their specific work areas. If you're creating a HazCom system for a company, you can review and track all chemical items your team members may work with. You can add or remove items to keep the inventory accurate as the inventory changes.

Taking inventory of hazardous chemicals may involve identifying materials and their hazards or knowing what materials are in a workplace. Once the list is complete, an employer can post it in a public area and distribute it to all employees to familiarize themselves with the hazardous materials in the workplace and interact with them according to their identified potential hazards.

17.5.2. Labeling system

Companies that ship or manufacture hazardous materials use the correct labels to comply with HazCom standards. These labels include the chemical's name, a signal word, a hazard warning or statement, instructions for safe handling and the name, address and phone number of the company or manufacturer.

In addition to the written text, chemical labels contain a pictogram that professionals can use to quickly identify an item's hazards. Some chemicals may include multiple graphics to show different hazards. Common pictograms may include a flame to denote the contents are flammable, an exclamation point to show the chemical is an irritant or a human health hazard symbol to show it's essential for an individual to use care when handling the item.

17.5.3. Safety data sheets

(SDS) is a document that shows the hazards of various chemicals. To comply with HazCom standards, companies create an SDS for each chemical they have in the workplace. They can give these documents to employees or transporters to help make a safer work environment. OSHA guidelines state the safety data sheet should contain the following information in this order:

- Chemical identification
- Hazard identification, such as a signal word
- Ingredient information
- First-aid treatment instructions
- Firefighting measures
- Protocols for an accidental spill or release
- Instructions for storing and handling items
- Guidelines for limiting exposure and instructions for personal protection equipment
- Physical and chemical description of the item
- Details about the material's stability and reactivity
- Information about the material's toxicology
- Information about how the product may affect the environment
- Disposal instructions
- Transportation guidelines
- Regulatory information, if the material has additional safety guidelines
- Other information, if necessary

17.5.4. HazCom training program

Companies can create a HazCom training program to help employees understand hazardous materials' safety procedures. During this training, professionals can learn more about the materials they may encounter at work and their associated risks. Companies can provide and discuss the safety data sheets for all items employees might work with, which can help team members prepare for their roles.

17.5.5. Written HazCom program

- A HazCom program is a written plan that details how a company plans to approach hazmat standards. It includes information about the inventory, labeling, SDS and training plans. For example, it may contain information about who can maintain the inventory and how often they can update the inventory amounts.
- Creating a HazCom program can help companies ensure they meet all standards. In the written plan, businesses can include details about how and when they plan to review their safety systems. This can help ensure companies update their procedures to comply with new HazCom guidelines

B18. Harsh weather Requirements

EGPC

18.1. Scope

The goal of this EGPC harsh weather requirements is to recommend practices to establish safe working environment for personnel working in oil and gas field activities

18.2. Definitions:

18.2.1. Inclement Weather:

As any extreme or harsh weather condition that makes it unsafe or impractical to work safely for personnel, operation and equipment, if precautions are not taken to protect against the hazard. Inclement weather conditions include cold temperatures, high temperatures, heavy rain, hurricanes, high winds, and tornadoes etc.

18.2.2. Wind Indicating Devices:

Unobstructed wind-indicating devices, such as windsocks & Anemometer, shall be provided and maintained in good condition. They shall be conspicuously located so at least one is readily visible from anywhere in the location.

18.2.3. Visibility:

The greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognized when observed against a bright background OR the greatest distance at which lights of 1,000 candelas can be seen and identified against an unlit background .

18.2.4. Low Visibility:

Visibility of less than 100 meters (330 ft).

Fog, Mist and Haze: Fog is the visibility of less than 1 km. Mist is the visibility of between 1 km and 2 km and Haze from 2 km to 5 km.

18.2.5. Knot:

Is a unit of speed equal to one nautical mile per hour, 1.852 km/h (approximately exactly 1.151 mph or 0.514 m/s). The ISO standard symbol for the knot is kn

18.3. Responsibilities

Rig Contractors responsible to suspend operations whenever find it unsafe to resume work Based on the weather forecast and to ensure that weather conditions are favorable and that adequate visibility exists for the work otherwise he must suspend or delay the operations until conditions improve

18.4. Procedure:

Work shall be suspended during inclement weather conditions such as heavy rains, fog/dust with poor visibility, sand storm, and high wind speed when such conditions are likely to cause harm to the people if they continue to work.

The Rig Contractors or the permit issuer, applicant & site HSE engineer should asses the risk of the situation and decide on the continuation of the activity.

The wind-indicating device is to be used at the rig site to record the wind speed or information to be obtained from a reliable source located sufficiently close to the worksite to assure the accuracy of the indicated wind velocity.

After clearance of inclement weather/sand storm, ensure the location is safe to work by inspecting all the work areas for any potential hazards.

18.4.1. Inclement Weather Precautions:

PIC is responsible for ensuring that the following precautions are in place.

18.4.2. Hot weather Precautions:

- Take frequent breaks. Avoid working under direct sunlight
- Rest and cool off several times during the day.
- Do not ignore warning signs from your body.
- Before start of physical work/job and during the job, drink plenty of cool water throughout the day even when you are not thirsty and do not eat heavy meals before working in the heat.
- Do not force yourself to do more work than you think you can. If possible schedule jobs to cooler part of the day.
- Get good sleep during your rest period/time.
- Do not work alone in isolated places. Always ensure you are being seen by others.
- Wear light breathable clothing.
- Supervisor to daily ensure crew are fit for job during summer.
- Contact Supervisor / First-aid Centre if you are not feeling well or you feel the heat stress symptoms.

18.4.3. Transportation precautions:

During the winter season, expected to have a heavy rains, fog and unclear visibility so be sure to have the following:

18.4.3.1. Before any trip:

- Check wipers are in place working properly and in a good condition.
- Check the level of windshield washer fluid and fill it up in case of low level.
- Check the radiator coolant level, oil level, and battery conditions.
- Check tire condition.
- Any journey is not permitted to begin until the bus supervisor, transportation representative, and PIC agree that there is sufficient/acceptable visibility.

18.4.3.2. During any trip:

- Ensure the trip is necessary, and reduce vehicle movement.
- Allow extra time for your journey and reduce your speed.
- Do not speed up & keep a safe distance from the front vehicle. Leave 6 seconds with the front vehicle & if you cannot make it pull over in a safe place.
- If visibility is seriously reduced by fog, use low-beam headlights and fog lights. Switch on your wipers to keep your windscreen clear.
- Remember to turn fog lights off when they are no longer needed, as they can be a distraction to other drivers.
- Avoid sudden braking, accelerating too quickly and harsh steering in slippery conditions.

18.4.3.3. Location precautions:

Location may be affected by rains and floods; thus the following shall be implemented:

- The graded road to the rig is well compacted and does not have weak points to prevent the wheel stuck.
- After any heavy rains, or floods rig road to be surveyed and checked its compatibility to avoid heavy trucks being stuck.
- In case of being in an area with a history of floods or heavy rains, be sure to choose the high ground area for camp setup to avoid being in rain or flood drains.

B19. High pressure systems (Air & hydraulic)

EGPC

19.1. Scope

This procedure applies to all high-pressure systems (air and hydraulic) in the workplace, including but not limited to:

- Compressed gas cylinders
- Air compressors
- Hydraulic pumps
- Hydraulic hoses and fittings
- Pneumatic tools

19.2. Purpose

The purpose of this procedure is to ensure the safe operation and maintenance of high-pressure systems (air and hydraulic) in the workplace. This includes:

- Identifying and assessing the hazards associated with high-pressure systems
- Implementing appropriate controls to prevent accidents and injuries
- Providing training to workers on the safe operation and maintenance of high-pressure systems
- Establishing emergency procedures for responding to high-pressure system failures

19.3. General Requirements

- All mud pumps shall be marked with safety signs indicating "Remote Start."
- A pressure relief device (PRD) shall be installed on all power-driven rig mud pumps that directly service the drilling or maintenance of the well. There shall be no valve between the rig mud pump and the pressure relief device.
- The PRD shall be set to discharge at a pressure not above the manufacturer's recommended maximum working pressure of the rig mud pumps and all connecting pipes and fittings.
- Shear pins used in PRDs shall be those specified by the manufacturer. Tools, welding rod tips, etc., shall not be used for shear pins.
- All PRDs of the shear pin type shall be provided with a guard or barrier placed around the shear pin and spindle of the device.
- All fluids or materials discharged through a PRD, including i.e. cement silos, mud pumps, etc. shall be piped in a direction that will not endanger workers.
- There shall be no valve in the discharge opening of a PRD or in the discharge pipe connected to it.
- The piping connected to the pressure side and discharge side of a PRD shall not be smaller than the normal pipe size openings of the device.
- The piping on both the inlet and discharge side of the PRD shall be adequately secured to prevent movement during discharge.
- The PRD lines shall be flushed at the beginning of each well and every month.
- The piping from the discharge side of the PRD shall be continuously sloped downward to the suction pit to drain liquids.
- All mud guns used for jetting shall be securely anchored.
- Quick-closing valves shall not be used on the discharge line from a positive displacement type mud pump.
- Clamps and wire rope safety lines shall be used to fasten a Kelly hose at the stand-pipe end to the derrick and at the swivel end to the swivel housing.
- Mud line system hoses, which may be subject to whipping in case of failure, shall be equipped with clamps and wire rope safety lines of sufficient strength and secured to adequate support.
- Wire rope safety lines shall not be attached at the connection. They are to be attached to the hoses after the internal fitting.
- Partial bolting of flange fittings is not permitted and installed bolts shall extend completely through their nuts.
- All MODU Mud Pump Rooms shall be configured to ensure routine equipment repair/ replacement activities can be safely and efficiently completed through strategic placement of certified lifting equipment anchor points hoists, or work platforms as appropriate to ensure safe access to mud pump components and relief valves.

- Each D&WO operator facility, Rig contractor, and service company equipment which is used on drilling facilities or rig locations shall develop and maintain a comprehensive Pressure Relief Register/tracking system.
- The register shall include:
  - The asset, and the number of relief valves associated with the asset.
  - Location.
  - Serial number.
  - Model number.
  - Service type.
  - Maximum Allowable Working Pressure (MAWP).
  - Set pressure.
  - Inspection certification intervals.
  - Service – Installation date.
  - Last Inspection date and type.
  - Next Inspection date and type.
  - Annual or as per OEM Inspection date and type.
- Pressure Relief Devices shall be calibrated by a third party company annually or as determined by the OEM recommendation, whichever is more frequent. Air service PRV's are required to have function test capability and be tested every three (3) months. A function test tag shall be displayed on each air service relief device.
- Maintenance personnel who perform the inspections and replacement of the PRVs shall verify the PRVs being installed has the required tracking information attached to the PRV and this information is documented into the PRV register/tracking system.
- All pressure gauges shall be calibrated as per OEM.
- All mud pump pulsation dampers must be marked with "Only N2 for pre-charge" text.
- High pressure gauges are critical pieces of equipment, their maintenance, repair and replacement must be monitored and tracked. All drilling contractors and service providers shall implement a program that addresses the criticality of this equipment. As a minimum, the following will be implemented.
- A "High Pressure Gauge Register" will be developed for every rig or work unit. All high pressure gauges shall be identified using the following information:
  - Unique ID.
  - Pressure gauge pressure rating.
  - Gauge location and use.
  - History of gauge calibration shall be maintained until the gauge is disposed of. (If the gauge history is not currently available, one shall be made starting with the next calibration).
  - Calibration of the pressure gauge shall follow OEM recommendations or stricter recommendations that are set by EGPC standards or requirements if implied.
  - Gauge Calibration Register shall have as a minimum (an example of a register is found below).
  - Gauge serial number.
  - Gauge location.
  - Gauge use.
  - Current calibration date.
  - Next calibration date.
  - Internal / external calibration service.
  - Calibration provider.

B20. Welding and cutting

EGPC

20.1. Scope

This procedure applies to the rig operators, contractors and service companies in all EGPC workplaces on all welding operations including Acetylene welding, Electric arc welding, Grinding, Machining, and Spot Welding to protect personnel from the hazards of cutting and welding, including sparks, molten metal, harmful rays, and flying particles.

20.2. Purpose

The purpose of this procedure is to ensure the safe performance of welding and cutting operations in the workplace. This includes:

- Identifying and assessing the hazards associated with welding and cutting operations
- Implementing appropriate controls to prevent accidents and injuries
- Providing training to workers on the safe operation of welding and cutting equipment
- Establishing emergency procedures for responding to welding and cutting fires

20.3. Definitions and Acronyms

20.3.1. Hot Work:

Any work involving a source of ignition such as welding, burning, cutting, riveting or similar operations, as well as the use of hand drills, grit blasting, equipment that could produce sparks, and electrical equipment which is not intrinsically safe (i.e. not Ex. proof).

20.3.2. Lower Explosive Limit (LEL):

Lowest concentration (percentage) of a gas or a vapor in air capable of producing a flash of fire in presence of an ignition source (arc, flame, heat). At a concentration in air below the LEL, there is not enough fuel to continue an explosion.

20.3.3. Lower Flammable Limit (LFL):

The Lower end of the concentration range of a flammable solvent at a given temperature and pressure for which air/vapor mixtures can ignite.

20.3.4. Oxygen Deficient Atmosphere:

An atmosphere containing less than 19.5% oxygen by volume.

20.3.5. Oxygen-Enriched Atmosphere:

An atmosphere containing more than 23% oxygen by volume.

20.3.6. Permissible Exposure Limit (PEL):

This is the maximum amount of airborne concentration of a substance to which a worker may be legally exposed. Most PELs have been defined as substances that are dangerous when inhaled, but some are substances that are dangerous when absorbed through the skin or eyes. A PEL may be defined in either of two ways a time-weighted average (TWA) concentration. This average concentration must not be exceeded during any 8-hour work shift of a 40-hour work per week.

20.3.7. Fire Watcher:

A person trained in firefighting, Fire watcher must be standing by with a suitable fire extinguisher. After work is completed, check that area is free of sparks, glowing embers, or flames.

20.4. Responsibilities:

20.4.1. Work Supervisor:

- Ensuring worksite inspections are carried out before, during, and after the performance of the hot work permit.

- Ensuring that all PTW & Risk Assessments have been met and that the work permit has been signed.
- Ensuring that proper PPE is used.
- Supervise employees properly.
- Ensure that gas testing for the Welding Operation was done and record it in the PTW.
- Obtaining agreement with the team on the minimum precautions needed to perform the work safely through the issue and use of PTW and the corresponding JSA for the job.
- Once the welding operation is completed it shall be verified that the personal tools, garbage, etc., have been evacuated from the workplace and PTW can be signed off.

20.4.2. Welder performing the work:

- Welder shall be qualified by having 6GR welding certification.
- Only certified Welder is allowed to use any type of welding or cutting equipment.
- Cutters, welders, and their supervisors must be suitably trained including Confined Space Entry, and competent in the safe operations of their equipment and the safe use of the process.
- Welders shall be provided with special welding coveralls, welding gloves, and flame retardant balaclavas/hoods as required, to protect them from molten iron, sparks, open flame, and intense heat.
- Welding coverall shall be worn with the sleeves rolled down and secured at the wrists. Buttons/zippers shall be secured so as to protect the wearers' chest and neck. Pant/coverall legs shall be worn rolled down and shall not be tucked inside footwear.
- The welder must lock the equipment in suitable secure storage when not in use to avoid misuse of the equipment.
- All helpers or other personnel working in the immediate area of the hot work will be required to wear appropriate PPE.

20.4.3. Employee on duty as Fire Watch

- Be aware of the effects of hazards from welding and cutting operations.
- Be aware of all classes of fire and all Types of Fire extinguishers and how to use it.
- Check that area is free of sparks, glowing embers, or flames.
- Fire Watch Personnel shall be familiar with the location of the Telephone, if available nearby and Fire and fume alarm boxes.
- They must have fire-extinguishing equipment readily available.
- They must watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm.
- Continues fire watch for at least 30 min after the job is finished.

20.4.4. HSE Engineer:

- Review PTW and ensure that all precaution is in place.
- Ensure that the gas test is done & recorded (Certified Gas tester list to be posted on PTW control board).
- Ensure that continuous gas monitoring is being implemented by a competent gas tester and recorded in PTW every hour.

20.5. Procedure

20.5.1. General Safety Precautions

- Welding and cutting equipment is strictly controlled and may be used only by qualified authorized personnel. Welding and cutting equipment maintenance may only be done by the same qualified, authorized persons. Use welding or cutting equipment with caution; it can cause numerous rig fires. The use of welding or cutting equipment is restricted to non-hazardous areas. No welding or cutting is to take place without a "Work Permit" approved by the Senior Tool Pusher / PIC.
- Before welding or cutting takes place near an oil-saturated area, the area should be washed

down thoroughly and soaked in water prior to commencing the job. No welding or cutting will be allowed on any tank, pump, or lines containing flammable fluids.
- If welding or cutting must be done on tanks, pumps, lines, etc that have contained a flammable substance they must be thoroughly clean and tested and certified gas-free before the work begins.
- The area surrounding the location for any proposed welding shall be examined to ensure that no spark flames, or hot slag will be blown in or fall upon any combustible material.
- Personnel using welding or cutting equipment must wear the correct eye/face protectors and correct protective clothing. On completion of any work, welding machines must be turned off, valves on bottles closed and all welding leads or hoses must be picked up and properly stored.
- Damaged cables or hoses should be repaired immediately or replaced totally if repairs are not considered to be safe by the supervisor.

20.5.2. Gas Cylinders

Cylinders of compressed gas are stored and used on all rigs. Personnel responsible for the use, handling, and storing of gas cylinders must observe these precautions:
- Internal storage areas must be well-ventilated on top and bottom.
- Cylinders stored in the open should be protected from heat sources Tarpaulin, or any other cover, must not be in direct contact with the cylinders.
- "NO SMOKING" signs must be displayed in and around the storage area.
- Cylinders shall at all times be protected from rusting and corrosive conditions.
- No artificial heat is to be allowed in stores where gas cylinders are kept.
- Full and empty cylinders should be kept apart, and clearly marked to prevent confusion and mistake.
- In order to store and transport this gas, acetylene cylinders are not voids, but are filled with a porous material that divides the interior spaces into small partly separated cells; thereby, limiting the size of individual gas areas. To avoid the storage of acetylene as a gas, the porous material is saturated with acetone, which will absorb up to 25 times its own weight of acetylene per atmosphere of pressure. Thus, the acetylene is stored and transported in cylinders at up to 250 psi because it is in solution rather than a gas.
- Because of the unusual properties of acetylene and the construction of cylinders, three very important points must be remembered:
  - If at all possible, store and transport acetylene cylinders in a vertical, upright position. If cylinders have been lying down, stand them upright for 30 minutes before attaching regulators and using them. This assures the acetone drains down, away from the valve where it cannot flow out of the bottle through the regulator/torch with possibly disastrous results.
  - Never allow acetylene gas in excess of 15 psi to flow on the downstream side of the regulator.
  - Cylinders should be separated from Oxygen cylinders a minimum distance of 20 feet or by a standard firewall.
- Oil or gas cylinder will ignite violently in the presence of high-pressure oxygen and an explosion may result. Cylinders and fittings must be kept away from all sources of contamination such as oil barrels, overhead shafting, cranes, or drive belts.
- Do not use cylinders as rollers, work supports, or jacks.

20.5.2.1. Handling Gas Cylinders

Experience shows that in the majority of cases the danger arising from the mishandling of cylinders falls under a number of well-defined headings, as follows:
- Cylinders may be subjected to undue strain by blows or mechanical damage.
- Pressure in the cylinder may be increased and the cylinder wall may be weakened by heat.
- The gas in the cylinder may come into contact with some material with which it reacts violently, even explosively.
- The gas may escape from the cylinder valve or attached apparatus, and become concentrated in a confined space.
- Faulty apparatus may be attached to the cylinder, or equipment may become damaged after attachment.

- The following rules must be observed when handling cylinders:
  - Cylinders must not be lifted with magnets and chains. A rope or nylon sling may be used to lift one cylinder, never more than one at a time, provided it is correctly adjusted to prevent slipping. If more than one cylinder has to be handled by a crane, a properly designated cradle with chain/wire suspension should be used.
  - Cylinders must not be allowed to come into contact with electrical apparatus or live wires, since arcing may be set up which will heat or damage the cylinders.
  - Cylinders must be kept away from sparks, flames, or slag from welding or cutting operations.
  - Personnel must not lubricate any valve or fitting, and must not use any white or red lead or any other jointing compound.
  - Personnel must not handle oxygen cylinders, valves, or any other fittings with greasy hands, gloves or rags.

N.B. Oxygen has no smell. Although it does not burn, it supports and accelerates combustion. Ordinary clothing, and more flammable materials such as oil, can be ignited and will burn fiercely in oxygen, or where the atmosphere has been enriched with oxygen. In confined spaces, a small amount of acetylene or oxygen may create a dangerous condition, which will cause an explosion or fire from a spark or naked light.

- Take care to avoid leakages, test with soapy water and a brush, never with a naked flame.
- If an acetylene cylinder overheats, perhaps due to excessive or severe backfiring of faulty equipment, it must be dealt with promptly as follows:
  - Shut the valve, detach the regulator, and take the cylinder into the open air, away from any source of ignition.
  - Immerse in, or apply water to cool the cylinder, open the valve fully and keep cool with water until the cylinder is empty. As this may take several hours, immediate contact should be made with the suppliers for further advice.

N.B. Acetylene can form explosive compounds in contact with certain metals or alloys, in particular copper and silver.

- Joint fittings or piping made of copper should on no account be used, and acetylene should never be allowed to come into contact with copper or any alloy containing more than 70 % copper.
- Keep cylinders and valves clean. Grit, dirt, oil, and dirty water should not be allowed to enter the cylinder valve sockets; otherwise, it will be impossible to prevent equipment from leaking at the joints.
- Clean out any loose dirt by “sniffing” some gas through, i.e. by opening and closing the cylinder valve momentarily before attaching regulators or fittings. Stand clear of the cylinder valves before clearing outlet socks.
- Shut the cylinder valves when work has to be stopped for more than a few minutes, or when the cylinder is empty.
- Use only the standard keys for operating cylinder valves. Do not increase the leverage, or employ a long leverage spanner or badly worn keys, or attempt to get gas from cylinders with broken spindles as valves may be damaged and the cylinder rendered useless and dangerous.
- The following rules must be observed while transporting the gas cylinders:
  - Cylinders should be transported with care. They should not be handled roughly, dropped, or knocked around while transportation.
  - Protective caps should always be in place on both full and empty cylinders while they are being moved or transported.
  - A special rack should be built for the purpose of transporting and storing oxygen and acetylene cylinders. The rack should be constructed as to properly secure individual oxygen and gas cylinders.
  - Empty cylinders should have the valve closed, the valve protection cap replaced, marked empty, and returned to the vendor.

20.5.2.2. Handling Valves and Regulators

Always observe the following procedures when handling valves and regulators for gas cylinders:

- The cylinder must always be opened slowly. Cylinder valve spindles always have right-handed threads, irrespective of whether the cylinder contains fuel gas or non-combustible gas. Excessive force must not be used.
- Cylinders must never be transported with the regulators and hose attached. Unless a proper trolley or carrier is used. When transporting, the cylinder valve must be shut.
- Welding or cutting apparatus must not be used unless automatic pressure regulators are fitted to the oxygen and fuel gas cylinders.
- It is unsafe to rely entirely on the use of a needle valve, as this does not prevent a reverse flow of gases towards the cylinders. Moreover, the use of a needle valve in the place of a regulator may cause the bursting of the hose if the gases are cut off at the blowpipe, as the hose will be subjected to cylinder pressure.
- For improved safety use reverse flow "flashback" arrestor check valves, the check valves on regulators MUST be fitted to stop the possibility of reverse flow of gas, which can create a dangerous mixture of fuel and oxygen. Check valves should be tested for proper function at least every six months. Careless usage, dirt, or, abuse can shorten check valve life and require more frequent testing.
- Before a regulator is put on a full cylinder, the person must always release the adjusting screw to regulate the pressure of output, otherwise there is a risk of damage to the regulator.
- It should be ensured that the threads on the regulators and other auxiliary equipment are the same as those on valve outlets. The outlets of the industrial gas cylinder valves are screwed with 5/8'' bsp thread: right–hand for oxygen and non-combustible gases, left–hand for acetylene, hydrogen, and combustible gases NEVER force connections that do not fit. Where cylinders are connected to manifolds or headers, such manifolds must be of proper design and equipped with one or more pressure regulators and proper flashback arrestors.
- Do not attempt to use the equipment for gases other than those for which it is intended. Coal gas, hydrogen, and acetylene/propane regulators are all fitted with left-hand threads of the same size, but acetylene or propane regulators should not be used on coal gas or hydrogen cylinders that are filled to a higher pressure than is suitable for them.

20.5.2.3. Handling Gas Cylinder Gauges

Always observe the following procedures:

- Never use pressure gauges other than those recommended by the suppliers. Gauges for oxygen should be marked "OXYGEN" and should not be tested with oil. Gauges used to show the contents of oxygen, nitrogen, coal gas, or hydrogen cylinders should have a dial reading of not less than 3000 psi (207 bar).
- No gauge used on acetylene should have a dial reading less than 600 psi (41.4 bar)

20.5.2.4. Handling Gas Cylinder Hose

Observe the following with regard to the hoses:

- Only the best quality hose is to be used. An Inferior hose tends to harden, crack, leak and may fire internally when oxygen passes through it.
- Hoses should be firmly attached to the blowpipe and other connections by crimping/ OEM recommendations and not Jubilee clamps. The Length of the hose is supplied with the ends firmly attached to nipples with screwed unions suitable for connection to standard regulator outlets and blowpipe inlets. These should be used in preference to any other hoses.
- Frequent accidents occur due to leakages, or the supply hoses becoming loose or blown off. Hose connections must be frequently examined. Lengths of the hose should be joined by means of suitable connecting fittings when more than the standard length is required. Do not use unnecessarily long lengths of hose.
- Cylinders should not be used to support the work, and handling of gas cylinders, nor should the blowpipe flame be allowed to come into contact with the cylinders. The blowpipe, when alighted, should not be hung on the cylinder or on the regulators.

20.5.2.5. Cylinder Color coding

Color coding applies solely to the shoulder or the curved part at the top of the cylinder and is used to identify the properties of the gas in the cylinder, a number of gases have been assigned a specific color and these are shown below:

Gas Type	Description	Colors
Oxygen (O_2)	The head/ shoulder white The body black	
Nitrogen (N_2)	The head/shoulder green The body black	
Acetylene	The head / shoulder brown The body brown	

20.5.2.6. Labeling Information

- All Gas cylinders are required to be labeled to indicate the contents of the cylinder. It must always be remembered that the label is the means of identifying the contents of the cylinder. The color of the cylinder is only a guide.
- The cylinder should carry the following information per the Egyptian regulation:
  - Capacity in liters
  - Cylinder's number
  - The gas name and its chemical symbol
  - The product name or trademark (as applicable)
  - The total weight of the cylinder
  - Test pressure
  - Operating pressure
  - The date of the last Hydrostatic test
- When operating outside Egypt the local regulation shall be implemented

20.5.2.7. Lighting Torch

- It is important that an adequate flow of fuel gas is issuing from the nozzle of the blowpipe or other apparatus before lighting up. Personnel must follow this procedure:
  - Set the regulators to the recommended working pressure.
  - Keep the blowpipe nozzle away from any source of ignition (pilot light, etc.) until the fuel gas is flowing freely from the nozzle. The use of a spark lighter is recommended for lighting blowpipes.

20.5.2.8. Using Compressed Gas Equipment

- Inspect the rubber hose periodically to see that it is free from cuts, cracks, burns, and worn places, and arrange it so that it cannot be cut by contact with sharp edges or corners, falling metal, sparks, or the blowpipe flame.
- Use a red hose for acetylene and other combustible gases, and be careful to see that they are never interchanged.
- Use hoses of equal length and do not coil the surplus hose around regulators or cylinders.
- Do not use odd bits of tubing. Remember that copper or high copper content alloy should not

be used in acetylene hose or other parts in contact with acetylene. Use a proper adaptor.

- Be sure to observe carefully the maker's instructions for lighting and using blowpipes.
- Never attempt to light a blowpipe until sufficient time has elapsed after opening the acetylene valve for the gas in the hose to normalize at the correct working pressure and for all air to be blown from the hose.
- It is important that the instructions for the correct procedure for lighting up and operation of equipment, and the safety precautions taken in the event of a cylinder becoming overheated, should be followed. Failure to carry out these instructions and precautions properly may cause the cylinder to heat up internally and burst.
- Cylinder should not be sited or used adjacent to the intake of air compressors.
- It is most important that the fire extinguishers are made available at the scene of welding operations before welding starts. Precautions for removing the fumes present during welding, and the rules laid down for welding, must be strictly observed.

20.5.3. ARC Welding:

Certain general precautions should be taken by all persons using arc-welding equipment for welding or cutting as follow:

20.5.3.1. Burn Prevention:

- Wear protective clothing leather gauntlet gloves, and hardhat and high-top safety boots. Always button the shirt collar coverall collar and pocket flaps to prevent the entry of sparks or slag.
- Wear a helmet with safety goggles with correct filter lenses or plates (protected by clear glass). This is a MUST for welding or cutting (and chipping), to protect the eyes from radiant energy and flying metal.
- Avoid oily or greasy clothing a spark may ignite it.

20.5.3.2. Fire and Explosion Prevention:

- Causes of fire and explosion are combustible gas reached by the arc, flying sparks, hot slag or heated material, and short circuits. Sparks and slag can fly 35 feet and will be unseen by the goggled welder.
- Keep equipment clean and operable; free of oil and grease, and in the electrical parts, free of metallic particles that can cause short circuits.
- Walls touching combustible material on the opposite side should not be welded on or cut. Clear all such material away before starting work. A firewatcher must be standing by with a suitable fire extinguisher. After work is completed, check that area is free of sparks, glowing embers, or flames.
- Any containers that must be welded or cut, which may have held flammable material, or which may produce toxic gases, must first be thoroughly cleaned, and if necessary, purged with air or water to remove any carbon dioxide.

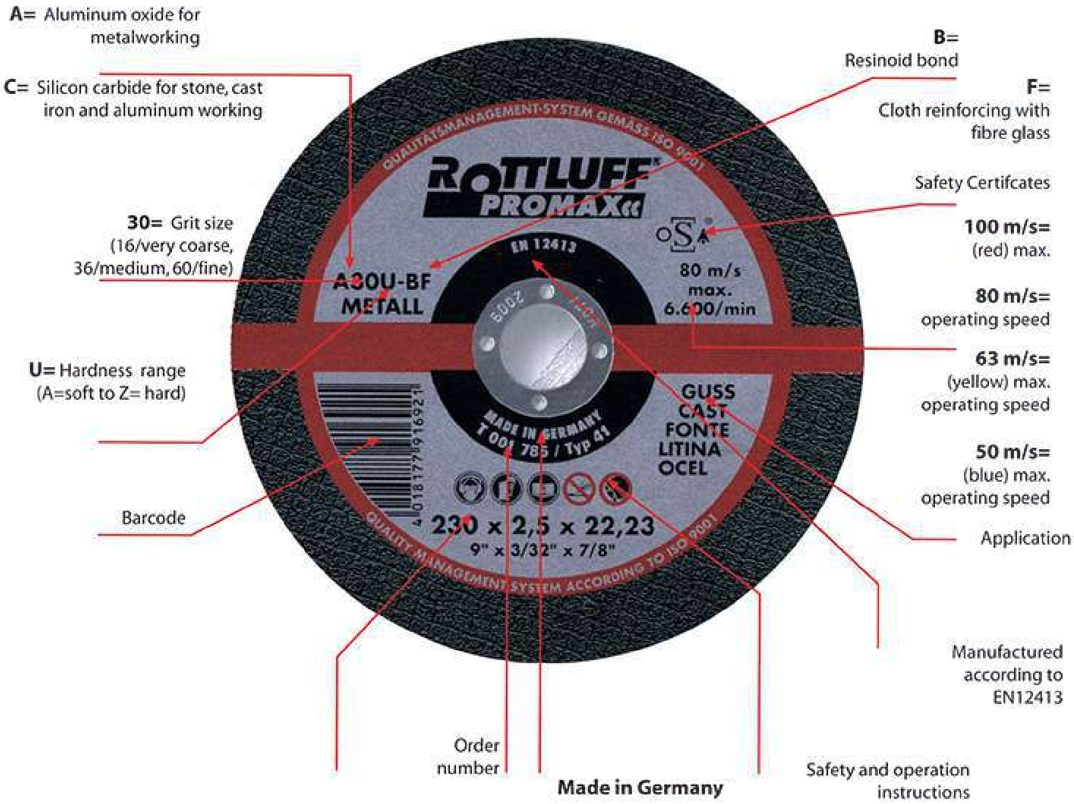
20.5.3.3. Shock Prevention:

- Exposed hot conductors or other bare metal in the welding circuit, or in underground, electrically hot equipment can totally shock a person whose body becomes a conductor. Do not come in contact with a wet surface when welding, without suitable protection.
- To protect against shock, keep body and clothing dry, and use a dry duckboard or rubber mat when working in a damp or wet area. Sweat, seawater, or moisture between the body and an electrically hot part – or grounded metal – reduces body surface electrical resistance, enabling dangerous, and possibly lethal, currents to flow through the body.
- Ensure the frames of each unit, such as welding power source, work table, etc., are adequately grounded. Conductors must be sized to carry grounds safely. Equipment made electrically hot by strong currents may shock, possibly fatally. Do not ground to electrical conduit, or to pipe carrying any gas or flammable liquid such as fuel.
- Before welding, check the ground for continuity. Be sure conductors are touching the bare metal of the equipment frame at connections. Fully insulated electrode holders with protruding

screws.
- Fully insulated lock-type connectors should be used to join welding cable lengths.
- Frequently inspect cables for wear, cracks, and damage. Immediately replace those with excessively worn or damaged insulation to avoid shock from bared cable. Cables may be taped to give resistance equivalent to the original cable.
- Keep cable dry, free of oil and grease, and protected from hot metal and sparks.
- Terminals and other exposed parts of electrical units should have insulating covers secured before operation.

20.5.4. Portable Grinders:

- Portable grinders are used for cutting, grinding, sanding, and brushing metal and timber materials, depending on the type of disc fitted to the machine.
- Using a portable grinder is a very critical job as incidents involving grinders do not happen often, but when they do, the results can lead to serious injuries and even death.
- General precautions to be followed when using a portable grinder:
  - Only preauthorized, qualified personnel are authorized to use the grinder.
  - Only authorized, qualified personnel may change the disks on a grinder.
  - Guards must be installed and adjusted, never operate the grinder without a guard being installed as if the wheel breaks while rotating, it can cause serious injury.
  - Guards/covers should cover half the disk between the operator and the disk.
  - Full personal protective equipment (PPE) should be worn while using the grinder (face shield, Gloves, safety boots, ear plugs, etc.).
  - Ensure the working area is clean and no flammable fluids/ materials are around.
  - Always use both hands when using the grinder.
  - Do not tighten the mounting nut excessively.
  - Do not put the grinder on the floor or working surface until the wheel has stopped turning.
  - Grinders should be cleaned and serviced according to manufacturer's recommendations.
  - Check if grinder cut off as soon as the dead man switch is released.
  - Never use the portable grinder as a bench grinder by clamping it to a vice.
  - Keep coworkers away from any grinding operations.
  - In case of excessive vibration or rough operation, shut off the grinder immediately.
  - Unplug the grinder before changing disks.
- Ensure disk fitted to the grinder is:
  - The correct type of material to be used.
  - The correct size of the grinder.
  - Disks are designed for a particular revolution speed which should be equal or exceed that of the grinder.
  - Cutting disks should not be used for grinding jobs, and grinding disks should not be used for cutting jobs.
  - Disks worn small through use should be discarded and NEVER used on smaller machines.
  - Free from any damage or cracks that may result of disk shattering.
  - Expiry date should be checked.


A= Aluminum oxide for metalworking
C= Silicon carbide for stone, cast iron and aluminum working
30= Grit size (16/very coarse, 36/medium, 60/fine)
U= Hardness range (A=soft to Z= hard)
Barcode
B= Resinoid bond
F= Cloth reinforcing with fibre glass
Safety Certifcates
100 m/s= (red) max.
80 m/s= operating speed
63 m/s= (yellow) max. operating speed
50 m/s= (blue) max. operating speed
Application
Manufactured according to EN12413
Order number
Made in Germany
Safety and operation instructions
ROTTLUFF
PROMAX
A30U-BF
METALL
EN 12413
80 m/s
max.
6.600/min
GUSS
CAST
FONTE
LITINA
OCEL
MADE IN GERMANY
T 001 785 / Typ 41
230 x 2,5 x 22,23
9" x 3/32" x 7/8"

B21. Temporary Pipework

EGPC

21.1. Scope

- The procedures to be applied for drilling and workover operation related to EGPC affiliated companies within Arab republic of Egypt
- All service companies working in drilling and workover operations related to EGPC affiliated companies shall adhere with all requirement mentioned in the procedures
- To define what is Temporary pipework and the Hazards associated with it.
- To review methods for mitigating the risks posed by temporary pipework operations.
- Temporary pipework, treating iron or CHIKSAN is piping and flow line equipment that is mobilized to the well site for performing different pumping or flowing operations.
- Temporary in the context of pipework, and flow line equipment, applies to any pipework, which can be changed out without recourse to formal structural or process engineering design reviews.
- Temporary pipework is manufactured for use in either Standard or Sour Service.

21.2. Responsibility

21.2.1. PIC of the Rig

The Rig contractor/operator's/Service company person in charge is responsible for implementing and following up the procedure/precautions, reviews, and requests revision when required.

21.2.2. Superintendents and service companies Representative

The Rig contractor/Rig operators Superintendents and service companies Rep. are responsible for verifying the procedure/precautions are adhered to on the Rigs under his responsibility.

21.2.3. HSE teams

The Rig contractors/Operations HSE teams are responsible for verifying the securing method during the periodical HSE audits, inspection tours and walkthrough where:

- It is forbidden to Use any uninspected pipework for all operations related to EGPC affiliated companies
- It is forbidden to use temporary pipe work without securing using OEM recommendations and best practices

21.3. Procedure

- Temporary pipe work operations General pumping operations (transfer of fluids, mud/brine mixing operations, reverse circulating well fluids, etc.)
- Pressure testing of surface lines and Equipment (Wellheads, BOP, Xmas tree, flow lines, etc.)
- Cementing.
- Well killing.
- Well Stimulation.
- Well Fracturing
- Well testing.
- Nitrogen pumping.
- Well clean up.
- Underbalanced drilling operations.
- Pressure testing of downhole equipment (casing, packers, tubing, plugs, valves, accessories)

21.3.1. Equipment used as Temporary pipework

Temporary pipework can be both hard and flexible pipe, It can also be any of the below equipment.

- Pipework runs (chiksans), pup joints, elbows.
- T-pieces.
- Laterals (Y-Pieces).
- Swivel joints.

- Treating loops.
- Crossovers.
- High pressure hoses.
- Flanges, blinds, plugs, tapping for sensors and sample points

21.3.2. Connections

- Temporary pipe work is always connected by hammer or WECO unions which can be an integral or welded. Threaded make up is not accepted anymore. The identification of the female and male parts of a hammer type union is shown in the figure below.
- Hub-type connections.
- Flange connections.
- Pipe body to pipe body (welded) or pipe body to Sub.
- Gas welded
- Friction welded
- Thread Pipe body to Sub
- NPST (no pressure seal on thread)
- PST (pressure seal on thread)
- Hammer-type connections

21.3.3. Provision of Temporary pipe work for Drilling Operations

Each Temporary pipe work component shall be identified with its service and unique identifier traceable to its type and manufacturer. Metal banding or hard stamping, using low stress stamps (Hard banding is preferred), shall include the following data:

- Unique identification number, traceable to material certification.
- Maximum allowable working pressure.
- Test due date.
  Note: if the label is missing then the item shall be re-certified.
- When hoses are fitted, the rated working pressure should be printed on and be clearly visible along the length of the hose.
- All Temporary pipe work shall be subjected to a regular maintenance program and shall take into account the manufacturers maintenance recommendations.
- Any Temporary pipe work equipment must be properly inspected prior to use.
- Test certificate must be valid as Per OEM / international related standard .
- Manufacturer certificate that shows a suitable material.
- Temporary pipe work equipment must be made up correctly at all connections and unions as per the recommendations of the operational design.
- Pipework should be suitably restrained where there is a connection (Hard pipe to hard pipe OR Hard pipe to flexible hose).
- Special register shall be available at the rig and service companies for Temporary pipe work equipment
- Any certified Temporary pipe work equipment should be included in a register so as to be easily tracked

21.3.4. General precautions during testing and operating

- Due to typical pressures and flow rates involved, temporary pipework systems contains a lot of stored energy, which can cause vibration, bending forces, and shock loading on the system. The fluids can attack the integrity of the strength of the system. That's why the following precautions should be considered during testing or pumping through Temporary pipe work. "Ref. Pressure equipment API requirement, clause #7.11 - API 54 - 4th ed."
- Installation of restraints is mandatory where fluids are pumped through the pipework. A restraint system acts like a shock absorber to absorb the kinetic energy of the pipe.
- Based on a rig contractor /service companies risk assessment, lines and hoses should be appropriately secured to restrict unsafe movement that could cause serious injury or death. Other suspended hydraulics and, airlines should be appropriately secured. A buffer zone based

on the risk assessment is recommended to limit injury exposure.

- During pressure testing rig contractor team shall keep at least two pipes run lengths away from the line under pressure barrier / NO-GO zones.
- Before the rig contractor starting the Pressure tests , rig management should announcing in the radio system and should be conducted only conducted under proper SJA and approved PTW prepared by rig contractor/service company and approved by rig operators representative . Keep out of the line of sight of pressured plugged outlets, instrument connections on vessels, and flow line equipment.
- Mismatching of the pressure rating of the connections with the pipe body is not accepted.
- Mismatching of pipe work hammer union components is not accepted. \
- Pressure de-rating of the pipework from its original working pressure specification below the manufacturer's recommendation is not accepted.
- Threaded connections are not accepted.
- The use of Chiksan swivels shall be kept to a minimum, where frequent movement is expected to occur when the pipe work is under pressure.
- Infield maintenance or repairs are unacceptable except for changing the rubber seal in the male connection by qualified and certified person

21.4. Temporary pipework identification and traceability

- Each temporary pipework component shall be clearly identified with its service & unique identifier traceable to its type and manufacture.
- Metal banding or hard stamping, shall include the following data:
  - The unique identification number, traceable to material certification.
  - The maximum allowable working pressure.
  - Test-due date.
  - Type of service (e.g. H2S, Standard).
- The band shall be fitted such that it floats on the pipe and cutting is the only means of removal. If the data is missing then the item shall be rejected and recertified.

21.5. Operational Hazards

- High level of stored energy due to pressures and flow rates involved
- Corrosive and/or erosive fluids being flowed can "attack" the integrity or strength of the system.
- Vibration due to excessive pulsation, mechanical natural frequencies and inadequate support.
- Shock loading, due to significant and fast change in flowrate or pressure.
- Hazardous fluids like brines, acid or H2S
- Catastrophic failure due to excess pressure, faulty connections, worn components, damage to the piping connection, mismatching unions

21.6. Hammer Unions

- Hammer unions are used in chemical process plants, the mining industry, the oil and gas industry, and other operations, and are available in different sizes and pressure ratings
- It is an old design (early 1950s) created by the Well Equipment Company (WECO) which was acquired by FMC Technologies

21.6.1. Identification of Hammer unions

- The union parts are "NAMED" using a Nominal pipe size, a FIG "designation" and a code e.g.1502.
- For example: (3 in. FIG 1502)
- The "3 in." is the Nominal diameter and is close to the inside diameter.
- The meaning of "FIG" is an abbreviation of "figure" – meaning drawing, and 1502 is a code for the Cold working pressure rating – "15" referring to 15,000 psi.
- For H2S service, pipework "15" means 15,000-psi Test pressure and cold WP rating of 10,000 psi.
- The last two digits in the designation of hammer unions generally refer to the sealing

arrangements.
- "02" refers to a square gasket seal "06" refers to an "O"-ring sea

21.6.2. Mismatching Unions

- Mismatches in hammer unions are severe mechanical hazards to the integrity of the temporary pipework system, which can fail under pressure.
- Mismatches occur in 5 main categories:
- Mismatching the same size.
- Mismatching the pressure ratings.
- Mismatching of wing nuts.
- Mismatching of components.
- Mismatching of non-detachable and detachable components

21.6.3. Mismatching Pipe Pressure Rating

Refers to connecting hammer union products having different pressure ratings but with end connections of the same size and figure number.

This occurs when mixing sour gas pipe with standard service pipe or when unions are welded to pipe with a working pressure lower than that corresponding to the union

21.6.4. Mismatching Wing Nuts

Occurs when the wing nut of one size and figure number is mounted on the male sub of another size and figure number.

There is only a small amount of engagement of the male sub in the wing nut and therefore the connection will not safely hold typical working pressures.

21.6.5. Mismatching Components

Occurs when segments and nuts of one figure number are made up of a detachable male sub with a different figure number.

This results in a small amount of engagement of the male sub with the segment engaging the wing nut.

21.6.6. Mismatching Non-Detachable And Detachable Components

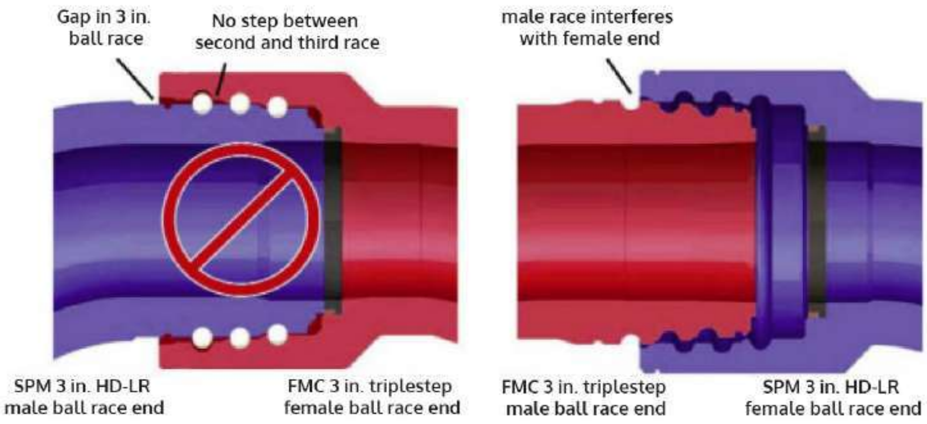
Is caused by the assembly of non-detachable nuts on detachable male subs.

The detachable wing nuts require a longer thread length to compensate for the segments between the wingnut and the sub-shoulder.

This results in a lack of thread engagement and an insufficient engagement between the male sub shoulder with the wing nut ID

21.6.7. Mismatching Swivel Joint Components

It is physically possible to erroneously assemble a male race end of a SPM 3 in. HD-LR component into the female race end of an FMC 3 in. component



Do not mix components from different manufacturers
dangerous mismatch to be avoided

The mating of hub connector components from two different manufacturers (only) is allowed if:

- The components are dimensionally the same and mechanically equivalent.
- The hub connector face shall be from one manufacturer and all the other connector components shall be supplied by the other manufacturer.
- The assembled connector integrity has been validated at temperature, pressure, and side-loading by the manufacturer supplying the majority of the components.

21.7. Elastomers

- Elastomers are used to provide the seal in hammer unions.
- When selecting the elastomers, consideration shall be given to the pressure, temperature, fluid type and exposure time.
- Elastomers suitable for high temperatures are not suitable for very low temperatures and vice versa.
- Seals exposed to high pressure or high temperature should have an integral backup / anti extrusion ring Anti-extrusion union seals are recommended for the following applications:
  - HP (exceeding 10,000 psi) and elevated temperature (exceeding 130°F)
  - Applications involving excessive side loading.
  - Where the pipework is in service for a long time e.g. extended well test.
  - Where periodic maintenance checks are required but cannot be conducted.
  - Pumping aggressive fluids, which may chemically attack union seals, leading to softening of the composition and possible extrusion.
  - Applications in which the suitability of the union seal material is marginal

21.8. Threaded Connections

- Threaded connections where the seal is made by the thread (PST), with a nominal size >1/2 in. are not allowed above 285 psi.
- The agreed specification break for “low pressure” is given by the rating class 150 flanges - A 105 material specification (forged carbon steel). The flange has a pressure rating of 19.6 bar (285 psi) (ASME 16.5).
- (Pressure Sealing Threads) provides a false sense of security - one cannot tell the condition of the threaded connection as it can be corroded by well or pumped fluids.
- Non-Pressure Sealling Threads
- Pressure Sealing Thread

21.9. NPST & PST FOR Hammer Unions

- Made-up NPST hammer union male and female connections often cannot be distinguished, viewed externally, from made-up pipework with PST connections.
- A solution to distinguish between the two has been introduced by FMC.
- NPST hammer union subs will be identified by a groove 0.38" from the end of the subs

21.10. Flexible Pipe- Hoses

- The high-pressure hoses that are used in temporary operations include:
- Hoses to direct well fluid from the test tree to the standpipe or choke manifold - test lines.
- Hoses to direct fracking fluids from the stimulation vessel to the frac head.
- Cementing hoses, Acid lines, Nitrogen lines
- Chemical injection hoses.
- Kill lines.
- The standards for hose design and construction for application in temporary pipework operations include API 16C, API 17J (which is identical to ISO 13628-2), for bonded and ISO 13628-10 for unbounded hoses.
- The recommended brand for high-pressure hoses is Coflexip (Technip).
- This hose design is classified as "unbounded flexible pipe".
- The construction consists of separate unbounded polymeric and metallic layers, which allow relative movement between the layers

21.10.1. Flexible Pipe – Hoses Handling

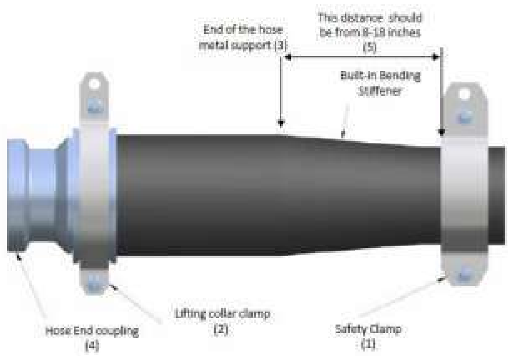
- The preferred installation for a flexible line is with the pipe positioned in a J or U configuration, with the end fittings pointing up in a vertical position.
- Do not leave a medium to longer lengths of horizontal pipe unsupported.
- Ensure the flexible pipe is not bent over or resting on sharp edges - any vibration will cause damage at such points.
- Do not exceed the minimum bending radius of flexible pipe. [Fig.1As a rule of thumb, the minimum bending radius (MBR) is roughly 12 x the I.D. of the pipe]

21.10.2. Risk Mitigation

Pre-mobilization Check List The pre-mobilization check of all the equipment shall include verification that there are no mismatches of the types identified in this guide of the mating integrity of connections of the interfaces where equipment comes from different suppliers of critical dimensions (IDs, ODs)

21.10.3. Installation of HP Hoses Clamps

- Don't use the safety clamp (1) as a lifting device as its location may result in over bending of the hose.
- Don't use the hose lifting collar clamp (2) as a safety clamp as the minimum breaking strength and working load limits are less than required and it is not positioned in the correct location for this task on the hose assembly
- Don't use the wrong safety clamp size as it will not assist in case of hose burst.
- Don't use any of hand made or unauthorized welded safety clamps



- Do Use the safety clamp for securing the Hose after the metal support (3) of the hose end
- by 8-18 inches (5) as the weakness point in the hoses is the area after the metal support area.

21.10.3.1. Cautions

- Warning signs shall be installed and the temporary pipework area shall be barriered-off during operations.
- During pressure, testing keeps at least 2 pipe run lengths away from the line under pressure.
- Keep out of line-of-sight of pressured plugged outlets, and instrument connections on vessels and flow line equipment.
- If any leaks are identified, the pressure shall be bled-off before attempting any repair.
- No not hammer temporary pipework under pressure
- Be aware of the liquid spills while disconnecting the hoses.
- Install barriers around the HP hoses area.
- Use proper secondary retention (spring washer, lock nut and safety wire) for hose size.
- Use proper torque for bolts and nuts for the clamp size.

21.10.4. Restraints for temporary pipework

- The forces reacting on pipework when fluids at high pressure are discharged through a rupture are large.
- The installation of temporary pipework restraints is mandatory where fluids are pumped or flowed through the pipework.
- The weakest part of the restraint system must have at least twice the strength of the force generated by the reactive force acting on the parted pipe.
- The maximum theoretical dynamic forces generated in wire ropes, round slings, fiber
- ropes, etc. used to restrain pipe when the pipe ruptures are given in charts based on the pipe IDs and pressures in question

21.11. Flow line Safety Restraint System (FSR)

21.11.1. Precautions

- It is critical that these products be used and maintained properly; any components that show obvious signs of damage or wear should be removed from service immediately.
- Flow Line Safety Restraint components are not intended for individual use, FSR Ribs and Spines are not lifting devices and should never be used as such, Any Ribs or Spines that have been subjected to any loads should be immediately taken out of service.
- FSRs are considered "single-use" items. This means that, while these components can be installed multiple times out in the field, if they are employed (that is, subjected to trauma
- as in the event of a union failing or a pipe rupturing), then the affected FSR components need to be replaced immediately.
- Always keep ALL personnel away from the flow line while under pressure. This applies even when a restraint system such as FSR is in place

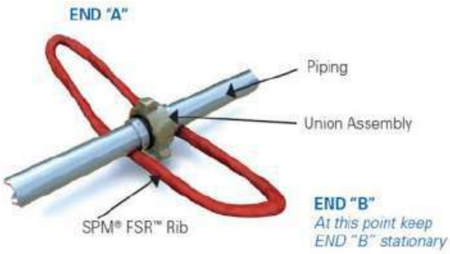
21.11.2. Hammering unions

- Connections, where the equivalence of the design and manufacture of one mating side (male/female/face) has not been established with that of the other mating side (female/male/face).
- Use of standard service pipework on sour service operations.
- Non-Pressure Sealing Thread (NPST) pipework without external hammer union sub identification.
- Pressure Sealing Thread pipework nominal size greater than ½"

21.11.3. Installing FSR

21.11.3.1. Step 1

Begin by positioning the Rib beneath the flow line as shown. The Rib profile should straddle the union assembly.



21.11.3.2. Step 2

Next, bring end "A" up and over piping and union assembly. Insert end "A" down through end "B" opening. Pull "A" back through to the original side as shown.

21.11.3.3. Step 3

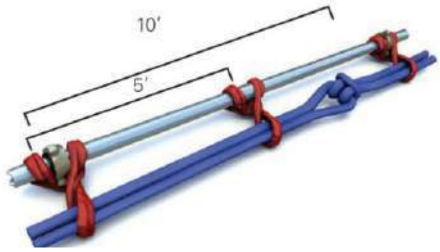
Continue to bring end "A" back around to form a second loop. Rib profile should still evenly straddle union assembly as shown.

21.11.4. Flow Line Components

Virtually all flow line components utilize two-wing union connections – usually male x female. Therefore, most flow line components (check valves, plug valves, etc.) require FSR Ribs installed at each end.

21.11.5. Long Piping Assemblies

Most piping assemblies can be treated like other flow line components - with one FSR Rib installed on each union connection at each end



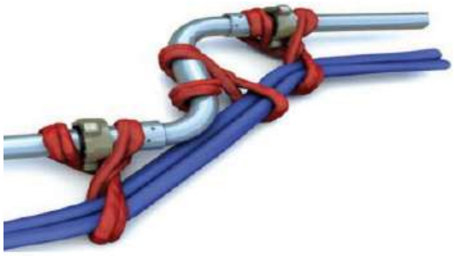
21.11.6. Swivel Assemblies

Swivel assemblies should have FSR Ribs installed at each of the following locations:

- One at each union connection
- One additional Rib for each additional articulating joint (excluding the joints adjacent to each union connection).

This will result in the following arrangement:

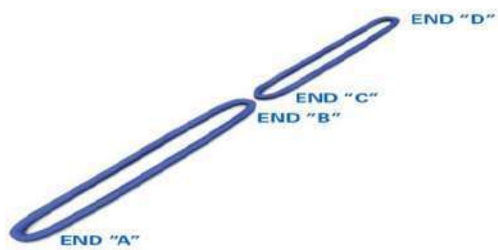
- Style 50 Three ribs
- Style 10 Three ribs
- Style 100 Four ribs



21.11.7. Installing SPM FSR Components-Spine Linking

21.11.7.1. Step 1

Lay out FSR Spines end to end as shown. For illustration purposes only, we will consider ends "A" thru "D" for this procedure



21.11.7.2. Step 2

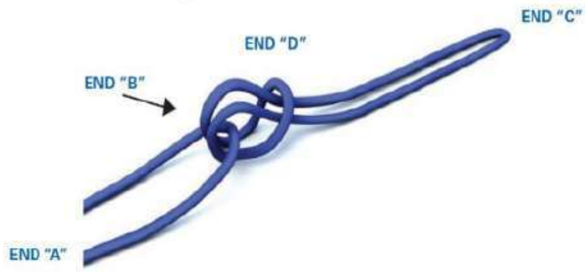
While keeping the "B" end stationary, draw "C" end thru as shown.

21.11.7.3. Step 3

Continue to pull "C" end thru "B" end. Insert "C" end back thru the "C-D" FSR Spine as shown. As "C" is pulled further, unrestrained "D" end will move towards "B" end.

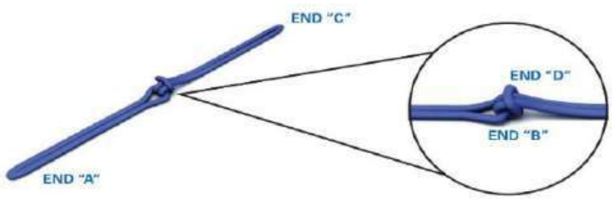
21.11.7.4. Step 4

Pull the remainder of "C" end thru until "D" end draws close to "B" end as shown. While holding "B" end stationary, (using either a second person or placing a weight on the "A/B" FSR) pull "C" end the remainder of the way through.



21.11.7.5. Step 5

With "C" end pulled taut, notice how "D" and "C" ends have switched places. Keeping "A/B" FSR stationary, keep pulling the "C" end until the "B/D" connection can no longer be tightened. SPM® FSR link should look like the detail shown.



21.11.8. Securing SPM FSR System Ends

21.11.8.1. Looping

the FSR Spine around the anchor point, then back through itself (Note: tying off to an anchor point is never acceptable)

21.11.8.2. "C" SHACKLE

Looping the FSR Spine around the anchor point, then utilizing an anchor shackle to secure the end back to the FSR Spine

21.12. Temporary pipework Inspection

21.12.1. Temporary pipework should be inspected yearly as follows:

- 100% wall thickness gauging should be applied.
- 100% Pressure testing.
- NDT on all welding and threads.

21.12.2. Inspection, Testing and Maintenance of Temporary Piperwork (Rigid pipework)

- All temporary pipework shall be subject to a regular (minimum annual) maintenance/inspection program as per the manufacturer's /EGPC requirements, but as a minimum shall include the following:
- Visual inspection of the pipe bore for erosion and corrosion.
- Visual inspection of threads and load shoulders and inspection of sealing surface conditions, bolts and lock rings, for male sub, female union thread half, wing nuts, hub, (including clamps and bolts), segment and retaining clip (circlip), swivel joint ball race.
- Magnetic Particle Inspection (MPI) of hammer union segments.
- Wall thickness measurements.
- Pressure testing to maximum working pressure for rigid pipework.
- If repairs/modifications have been done, the P/T shall be 1.5 x WP

21.12.3. Inspection, Testing, and Maintenance of Temporary Pipework (Hoses)

- The inspection of hose end connections as above.
- The external protection cover for the hose shall be inspected for damage and action taken to replace the hose if needed.
- The internal bore of the hose shall be checked for wear corrosion and erosion as prescribed by the hose manufacturer.
- Annual pressure test to cold WP or the pressure prescribed by the manufacturer.
- As specified by the manufacturer, but not exceeding 5 years of non-destructive examination (NDE) shall incorporate:
- Magnetic Particle Inspection (MPI) of pipework welds.
- MPI/LPI of castings, e.g. cast wing nuts.

21.12.4. Equipment is forbidden in operations

- 2" FIG 602 hammer unions and 2" FIG 1002 hammer unions. Ref. API RP54 clause 7.11.5
- Hammer unions flowing produced, energized fluids from the well at pressures greater than
- 10,000 psi.
- Pipework where the pipe body has a lower pressure rating than either of its end connections.
- The pressure de-rating of pipework from its original working pressure specification
- because of reduction in its wall thickness
- Back-welded threaded connections or fittings.

21.12.5. Duty and pressure rating chart

Size And Pressure Ratings	
	Light Duty
Nominal Iron Size	Max Working Pressure (PSI)
2″	15,000
3″	7,500
4″	5,000
	Medium Duty
Nominal Iron Size	Max Working Pressure (PSI)
2″	20,000
3″	15,000
4″	10,000
	Heavy Duty
Nominal Iron Size	Max Working Pressure (PSI)
2″	20,000
3″	15,000
4″	15,000

Note:

- FSR Ribs and spines are rated for specific duty ratings. Ribs should NEVER be substituted for Spines. Ribs and spines from different duty ratings should not be mixed.
- Medium Duty FSR System is rated for use on 4″ treating iron up to 10,000 psi. In instances where the product is required for 4″ 1502 lines, a double wrapping technique may be used that will provide an acceptable load rating for the flow line. Please contact Weir

21.12.6. Duty rating and color code chart

Color codes	
	Light Duty
SPM® FSR Ribs	Yellow
SPM® FSR Spines	White
	Medium Duty
SPM® FSR Ribs	Red
SPM® FSR Spines	Blue
	Heavy Duty
SPM® FSR Ribs	Orange
SPM® FSR Spines	Grey

Note: the color code could be changed as per OEM

21.12.7. Chemicals capability chart

Chemical	FSRs
Acids	See note
Alcohols	OK
Strong Alkalis	OK
Ethers	OK
Hydro-Carbons	OK
Ketones	OK
Oils-Crude	OK
Oils-Lubricating	OK
Soaps/Seawater	OK
Water/Seawater	OK
Weak Alkalis	OK

Note:

- Acid compatibility- hydrocarbon Acid (HCl) concentrations up to 36%are acceptable for up to 8 hours
- Hydrofluoric Acid-(HF) concentration up to 10%are acceptable for up to 8 Hours

21.12.8. Additional guidelines

- FSRs are intended to help contain high-pressure piping and flow line components in case of rupture or excessive impulse during the pumping process. When flow lines fail, whether it is due to excessive pressure, faulty connections, worn components, trauma to the piping connections, or otherwise, the results can be devastating and catastrophic to both equipment and people. The metal components that were previously subjected to up to 20,000 psi of internal pressure are suddenly and instantly forced to relieve themselves of the stored energy.
- Safety Restraints generally do not require any special maintenance to keep them in service. Even though they are water resistant, the components should NOT be used underwater or submerged in water. If they are in an environment where they get wet, it is recommended that they are wiped dry after each use with a clean, dry cloth.
- Temperature rating is "Minimum: -30◦ C / -22◦ F - Maximum: 100◦ C / 212◦ F'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Section C:
Offshore Safety Requirements (Jack up rigs)

CI. Over water operations

EGPC

1.1. Scope

The scope of over-water operations is vast and encompasses a variety of activities, including:

- Exploration drilling: Locating and evaluating potential hydrocarbon reservoirs.
- Development drilling: Creating wells to access and extract oil and gas.
- Workover operations: Maintaining and repairing existing wells to optimize production or address technical issues.
- Decommissioning: Plugging and abandoning wells that are no longer productive.

1.2. Purpose

The primary purpose of over-water operations is to access and extract hydrocarbon resources from offshore locations. This is essential for meeting global energy demands, as a significant portion of oil and gas reserves are located beneath oceans and lakes. Over-water operations also contribute to:

- Economic development: Generating revenue for governments and creating jobs in the oil and gas industry.
- Technological advancements: Spurring innovation in drilling and production technologies to overcome the challenges of offshore environments.
- Geopolitical stability: Securing reliable energy supplies for countries with limited onshore resources.

1.3. Requirements

- Working over water will be controlled using the contractor Permit to Work (PTW) System (Refer to Section B PTW procedure). The Rig Operator Drilling Supervisor will counter sign all over water or PTW.
- When work is performed over water, the Rig contractor shall instruct all personnel in the proper water entry and survival procedures to be used.
- While working over water an emergency means of escape from platforms shall be provided.
- IMO / SOLAS approved life preservers and buoyant work vests (personal flotation devices (PFDs)) shall be readily available on an offshore rig or platform. They shall be used whenever there is a risk of falling overboard, working above water, gangways or platforms with removed handrails, etc.
- Oil-soaked or otherwise damaged personal flotation devices (PFDs) shall be removed from service and destroyed.
- Approved PFDs shall be worn:
  - When being transported by personnel basket between an offshore drilling rig or platform and a crew boat.
  - When performing work over water or from a work basket that is suspended over water.
  - When moving either a blowout preventer or a diverter stack on or off the wellhead where the suspended work platform on which personnel are working is over open water.
  - When being lowered to the water in a davit-launched life raft, life boat, survival craft, rescue craft or inspection boat.
  - When being transported by helicopter over water.
- Employees wearing PFDs shall keep them snugly fitted and securely fastened.
- Decks of all rig platforms shall be kept clean of oil, grease, debris and free of all excess equipment that poses a tripping or fire hazard.
- Equipment to be transported to or from offshore water locations shall be securely tied down once the cargo has been loaded on a vessel.
- It shall be the responsibility of the person controlling a vessel to determine when it is safe or unsafe to tie up or jack up on a well site.
- Fire drills, abandon rig drills, Hydrogen Sulphide (H2S) drills, and man overboard drills shall be held by the Rig Operator as per EGPC Drills matrix. The Rig Operator shall brief all newly arriving personnel on all emergency procedures.

- Working over water during adverse weather conditions shall be suspended when rescue operations, if necessary cannot be conducted safely, i.e., Support Vessel unable to provide rescue support or the rig cannot safely launch the Rescue Craft.
- Sufficient work area illumination shall be provided in the over water work and sea areas.
- Man-Overboard rescue plan shall be part of the over-the-side-work JSA.
- Each offshore rig shall have records of mooring line installation dates, certification, and replacement program in addition to a monthly inspection process as minimum.

C2. Life Saving Equipment (LSE) MODUs

EGPC

2.1. Scope

Life Saving Equipment (LSE) MODU requirements outline the specific equipment, procedures, and training necessary to ensure the safety of personnel working on Mobile Offshore Drilling Units (MODUs) in the event of an emergency. These requirements are designed to:

- Minimize the risk of injury or death during emergencies.
- Facilitate rapid evacuation of personnel from the MODU.
- Provide adequate protection and support for personnel in the water after evacuation.
- Maintain operational functionality of LSE during emergencies.

These requirements apply to all drilling and workover contractors operating MODUs in various offshore environments, including fixed and floating platforms, jack-up rigs, and drill ships.

2.2. Purpose

The primary purpose of LSE MODU requirements is to:

- Protect human life: Ensure the survival and rescue of personnel in case of accidents or emergencies such as fires, explosions, structural failures, or collisions.
- Minimize downtime and financial losses: Rapid and effective evacuation minimizes disruption to operations and potential damage to the MODU.
- Comply with regulations and international standards: LSE requirements adhere to national and international regulations like SOLAS (Safety of Life at Sea) and IMO (International Maritime Organization) guidelines.

2.3. Requirements

- There shall always be enough personal flotation devices (PFDs) aboard to provide 125% coverage of persons on board at any time.
- The PFDs shall be maintained in good condition, U.S.C.G. or U.K.D.O.T. approved, and labeled with the name of the rig.
- Spare PFDs shall be stored in marked containers throughout the rig.
- Each cabin shall be equipped with the proper number of PFDs stored on top of the lockers.
- PFDs shall be equipped with compliant (within the manufacturers' expiration dates) salt water activated lights, whistles and reflector tape (one for each bed in the room).
- Each offshore rig shall be equipped with at least ten (10) life buoys rings maintained in satisfactory condition, and mounted so that they are easily removable from their brackets.
- At least one ring life buoy on each side of the offshore rig (total of two) shall have attached to the ring a buoyant life line that is at least 1-1/2 times the distance from the deck of stowage to the waterline at low tide and maximum air gap of 27.4 meters (90 feet), whichever is greater. The end of the line must not be secured to the rig.
- Note: These life buoys may not have any other attachment, the throwing line must be attached directly to the buoy, and the throwing line must be stored so as to unravel without knotting when used.
- Not less than one half of the total number of lifebuoys shall be provided with lifebuoy self-igniting lights, not less than two of these shall also be provided with lifebuoy self-activating smoke signals and be capable of quick release. Lifebuoys with lights and those with lights and smoke signals shall be equally distributed on both sides of the MODU and shall not be the lifebuoys provided with lifelines.
- All ring life buoys shall be in their proper location according to the rigs approved fire control and lifesaving equipment plan, and each shall be marked with the rig name and port of registry.
- Escape ladders with OEM protective covers shall be provided and maintained either side of the MODU on the main deck. Escape ladders shall be attached to the MODU on no less than two (2) certified anchor points each with a minimum SWL of 1000 kg or the manufacturer SWL of the ladder. Appropriate access platforms shall be provided for each escape ladder.
- There shall be a minimum of 200% coverage of life rafts aboard in addition Inflatable life

rafts and their containers shall be intact and not damaged. The rubber seals shall be free of breakage or damage, and the container bands intact.
- Operating instructions shall be posted at each life raft in English and Arabic languages.
- Annual certification by an OEM's authorized third party and servicing inspections shall be required for all life rafts and containers.
- All life raft containers shall be kept clean and free of oil and gas, and shall be clearly marked with "inflatable life raft," date of next servicing and capacity.
- Access to each raft shall be free of obstructions that would interfere with launching.
- The cradle for each raft shall be of proper size and the release mechanism kept free of rust and corrosion.
- Inflatable life raft containers shall be stored with the top straight up so the drain holes on the bottom are properly positioned for drainage of any moisture.
- Temporary lashing bands used in transporting the inflatable life raft containers shall be removed before stowage on the rig.
- The Rig Operator shall ensure that the length of the painter line for each manually launched inflatable life raft is greater than the distance from the deck of stowage to the waterline at low tide and maximum air gap. The Rig Operator shall ensure all life rafts are stowed within the manufacturer's maximum certified storage height.
- The exit point for the painter line shall be pointed aft of the rig when possible to protect it from the on-coming water during towing.
- The painter line for each inflatable life raft which is not davit-launched shall have its external end secured to a strong point on the platform.
- Each life raft station shall be clearly marked to conform to the Station Bill.
- Emergency escape routes leading to the lifeboat and life raft stations shall be conspicuously marked. Pathways shall be painted throughout the MODU, maintained and kept clear at all times. A standard escape route/pathway will have a minimum width of 600 mm (24 inches) in accordance with the applicable SOLAS Regulations.
- Station Bills shall be kept current and posted in conspicuous locations throughout the MODU.
- All MODU Station Bills shall define the Emergency Response Actions to be taken in the following specific incident scenarios:
  - Rig Abandonment.
  - Combustible Gas Release.
  - Fire.
  - H2S Release.
  - MODU Rescue Boat Operations

Note: Each MODU shall develop a compliant Station Bill which is aligned with the required Fire Attack Plans, H2S Contingency Plan, and Safety Briefing. The Station Bill shall specifically define the required emergency response actions to be taken upon the activation of any has release Warning High alarm (visual). Crucial MODU Emergency Response Assignments such as the closure of Main Deck Fire Dampers and Hatches, Activation of Fixed Fire Extinguishing Systems, along with the composition of the Fire Fighting and Rescue Teams shall also be clearly defined.

- The launching equipment for davit-launched inflatable life rafts must include:
  - A means to hold it securely while personnel enter the life raft.
  - A means to rapidly retrieve the falls if the station has more than one life raft.
  - The capability of being operated from either the life raft or from the rig.
  - Winch controls located where the operator can observe the life raft launching.
  - A system whereby a loaded life raft does not have to be lifted before it is lowered.
- Not more than two davit-launched life rafts may be launched from the same launching equipment.

Note: All personnel aboard will receive sufficient training as to allow them to efficiently and safely load and launch a davit launched life raft.

- Survival craft and life rafts shall be manufactured to a recognized international standard.
- The access route and launching platform from which survival craft are to be launched shall be kept clear of any obstruction that interferes with the immediate launching of the craft.
- An embarkation ladder extending, in a single length, from the deck to the waterline in the lightest seagoing condition under unfavorable conditions of trim of up to 10 and a list of up to 20 either way shall be provided at each embarkation station or at every two (2) adjacent embarkation stations for survival craft launched down the side of the MODU. The operator may permit such ladders to be replaced by approved devices to afford access to the survival craft when waterborne, provided that there shall be at least one embarkation ladder on each side of the ship. Other means of embarkation enabling descent to the water in a controlled manner may be permitted for the life rafts.
- Emergency and dead ship lighting shall be provided at each embarkation ladder, life raft, life boat, rescue boat and designated muster stations. Emergency and dead ship lighting shall also be provided for overboard launching zones for a minimum of 30-minutes of full operation and shall be maintained in good working order.
- Each survival craft shall be marked with the number of the craft, name of the rig, port of registry, and the number of persons allowed in the craft. This marking shall be with letters at least 7.6 centimeters (3 inches) high and in a color that contrasts to the background color of the craft (international orange). Davit release mechanisms are to be clearly labeled in a manner to prevent premature release.
- Davit release mechanisms shall be clearly labeled in a manner to prevent premature release.
- The watertight doors of all survival craft shall seal properly to maintain watertight integrity.
- Spare life preservers shall be stored in a storage box outside both lifeboats.
- A compass shall be mounted in the craft where it will be readily visible to the operator. It shall be maintained in good working order.
- The gear shift and throttle control shall always be kept in the neutral position until made ready for starting the engines.
- The salt water inlet valve and fuel shut-off valve shall always be in the open position.
- The fuel tank shall be kept full. Lifeboat and rescue boat diesel fuel shall be changed out annually and a log maintained.
- All survival craft shall be checked weekly and recorded in a log book by a qualified mechanic to ensure the following:
  - Compressed air tanks are full.
  - Drain plug is in place.
  - Battery and battery connections are in good condition.
  - Belts and hoses are in good condition.
  - Transmission and hydraulic fluid, and oil levels are in the full range of the dipstick.
- Abandon Ship and Rescue Boat Drills shall be conducted in accordance with EGPC drills Matrix.
- All survival craft engines shall be started weekly and run for no longer than five minutes (or until the engine becomes warm) if the craft is not placed in the water.
- All emergency supplies required in the survival craft shall be visually inspected weekly to ensure that they are still safely stored in the craft.
- Emergency food rations and drinking water in each survival craft shall be replaced prior to their expiration date. They shall be replaced sooner if the vacuum seal of the container is lost. Signal flares shall be replaced prior to their expiration date.
- The complete launching system for all survival craft shall be visually inspected weekly by a qualified mechanic to ensure that the hand stop, wire rope, U-clamps, motor and motor starter, supports, sheaves and blocks, falls, release pins, and limit switches are in good order.
- When any survival craft is launched in the water during boat drills, the sprinkler system shall be checked to ensure that it works properly.
- A survival craft operator and alternate operator shall be assigned to each craft. Both shall be trained in the operation of the survival craft. As a minimum, one of the assigned operators will be capable of completing running repairs on the survival craft.

- One McMurdo Marine Model RT9-3 or equivalent shall be available at each lifeboat.
- Class Society five (5) year load test certificates shall be obtained for all lifeboat on-load release mechanisms winches and davits, this information will be entered into the MODU lifting equipment registry.
- Lifeboats shall have a compliant cascade system installed complete with manifolds to ensure sufficient air is available under demand for the total capacity the lifeboat is certified to carry. Cascade plug in points shall be available for the maximum allowable capacity of the lifeboat. Air shall be supplied from the MODU cascade system via a breakaway airline connection.
- Each lifeboat shall have certified anchor points used for connecting safety slings during lifeboat inspections and maintenance rated the lifeboats OEM's certified minimum SWL.
- Lifeboat and life raft on-load release mechanisms shall be certified by an OEM authorized third party service provider, on-load release mechanisms shall be inspected and function tested per IMO/Class requirements.
- All designated muster stations shall have a minimum of 0.35 m^2 (square meters) per person of unobstructed assembly area. The calculation of the required assembly area shall exclude any obstructions, defined access/escape paths, lifejacket containers or doorway openings.
- Muster areas shall have clearly marked assembly indications on the deck for each person assigned to the muster station.
- Cascade breathing manifolds shall be suitably positioned to minimize the potential for any obstructions of access/escape paths. Hose lengths at muster areas shall be of adequate length and shall not allow obstructions to the defined exit/emergency paths.
- Designated muster areas shall be arranged appropriately to allow for a clear access path to the lifeboats embarkation area without obstructing the movement of assembled personnel.
- Muster Area personnel assignments shall be defined based upon calculated space available.
- Each rig shall have a Class approved designated rescue boat. The rescue boat shall comply with all applicable SOLAS Regulations and maintain a valid safety certificate. All designated members of the rescue boat crew shall have specific training and operations experience with the rescue boat.
- Offshore drilling contractors shall ensure that all survival craft comply with MODU code requirements.

Note:

- Falls, where used, should be long enough for the survival craft to reach the water with the unit under unfavorable conditions, such as maximum air-gap, lightest transit or operational condition or any damaged condition
- All MODUs shall develop and implement an OEM Compliant LSE maintenance and inspection process to ensure all LSEs are diligently maintained and readily operable.

C3. Helicopter Operations

EGPC

3.1. Scope:

Helicopter operations play a crucial role in the offshore oil and gas industry, facilitating transportation of personnel and equipment to and from Mobile Offshore Drilling Units (MODUs) located in remote or challenging marine environments. The Helicopter Operations Procedure (HOP) outlines the specific protocols, equipment, and training necessary to manage these operations safely and efficiently.

3.2. Purpose:

The primary purpose of the HOP is to:

- Ensure the safe and efficient transport of personnel and equipment between shore bases, helicopters, and MODUs under various weather and sea conditions.
- Minimize the risk of accidents or fatalities during helicopter operations.
- Maximize operational uptime and efficiency by optimizing helicopter movement.
- Comply with national and international regulations governing safe helicopter operations in offshore environments.

3.3. Definitions

3.3.1. Moving helidecks

A helideck mounted on a floating unit such as a Vessel, Floating Production Unit, Semi-Submersible Rig, floating Jack up Rig, and other helidecks shall be considered to be an unstable/ moving landing area if the Pitch or roll exceed ± 3° degree.

3.3.2. Pitch and Roll (P/R)

Pitch and Roll angels relative to absolute horizon. The roll axes is parallel with the helideck heading.

3.3.3. Helideck Inclination (Inc.)

The angle between the absolute horizon and the plane of the helideck.

3.3.4. Heave Amplitude (HA)

The vertical movement of the helideck.

3.4. Helideck Organization

Rig contractor shall comply with Rig Operator Vessel Helideck and Operations Requirements and

Latest ECAR-138 (Egyptian Civil Aviation Authority- Part 138) and prepare a rig specific Helicopter operation procedure.

Each Rig shall maintain a specific Helicopter operation procedure and it shall be available in hard copy and signed by top management.

3.4.1. Personnel

Personnel engaged in the helicopter operations include:

- HLO (Helicopter Landing Officer)
- Radio operator
- 2 X Helideck Assistants (HDA)
- Minimum 1 cargo handling person

3.5. Responsibilities

3.5.1. HLO's - HDA's Responsibilities

Each contractor shall have a designated person(s) / Crane Operators who has received HLO/ BOSIET training.

The designated person(s) / Crane Operators are formally trained and certified as HLO. It is the duty of the HLO to supervise and run day to day operations on the helideck during helicopter visits.

3.5.1.1. 30 Minutes before Helicopter Landing

- Receive radio operator's advice on all details needed and incoming load.
- Ensure Helideck is free of obstruction and loose articles including gas or flammable substances.
- Check availability of fire/crash equipment.

3.5.1.2. 10 Minutes before Helicopter Landing

- Communicate to crane operators to stop all crane operations.
- Remove Traffic cone from Heli-deck center.
- Deploy fire equipment, unlock crash boxes, and prepare fire team.
- Restrict access to Helideck.
- Ensure that stand-by boat supply vessel has been informed.
- H E R T M to be alerted and on stand-by.

3.5.1.3. Immediately Before Landing

- Confirm all crane operations have ceased.
- Deploy fire/crash team.
- Clear Helideck of all personnel.

3.5.1.4. After Landing - Rotors Running Turn Round

- Wait until rotating anti-collision lights are switched off / Pilot Signals.
- Disembark passengers, freight, and clear Helideck.
- Hand manifests to the pilot
- Load outgoing freight and passengers.
- Clear Helideck of all personnel except line crew.
- Remain clear of rotor sweep in sight of pilot.
- Check closure of doors and security of hatches.
- Clear Helideck prior to take off.
- Advise radio operator that Helideck is clear for takeoff, and give all-clear signal to pilot.

Note: HLO must be visible to the pilot at all times. He should not be handling cargo or passengers.

3.5.1.5. After Landing - Shutting Down

- Wait until rotors are stopped.
- Disembark passengers and freight.

Note: Tie-down straps are provided for restraining the helicopter when shut down on the rig. These straps are included in the permanent equipment on every helicopter. The flight crew will advise on the tie-down procedures (If exist).

3.5.1.6. Helicopter Departures

- The pilot shall be given a copy of the manifest for outgoing passengers/cargo from HLO. Hand manifest to pilot.
- Passengers, baggage and cargo shall be loaded per the directions of the pilot.
- Passengers shall follow the directions of the pilot and HLO during boarding and be mindful to keep clear of the tail rotor and the main rotors at the front of the helicopter.

- Passengers shall wear life jackets and ear protection, with seat belts fastened.
- The HLO shall check the closure of doors and the security of hatches.
- Clear Helideck of all personnel except deck crew.
- Watch pilot's signals, be ready for rotor start, and ensure all personnel are clear of rotor sweep area.
- Helideck crew should make sure that all passengers are wearing life jackets in the right way.
- HLO shall check for fuel and oil leaks, shall clear the Helideck prior to take off and give the all clear signal to pilot for takeoff.
- Advise Radio Operator Helideck clear for take-off.
- Put back the Traffic cone after departure.

3.5.2. Radio Operator

- The radio operator is in charge of communications with the helicopter until immediately before landing and after the helicopter has taken off safely.
- Radio operator receives information about:
  - Expected time of arrival
  - Helicopter type
  - No. of passengers
  - Request for weather information (from the pilot)
  - advises the HLO when the Helideck crew must be ready for helicopter handling,
  - Prepares a manifest including information on passengers, freight and luggage,
  - Calculates the total weight and converts it to the weight unit used on the helicopter type
  - Informs the helicopter pilot of situations, which may cause a risk such as cold flaring, fire, manned cranes etc.

3.5.3. Pilot

The pilot is ultimately responsible for loading, unloading and weight distribution. The HLO follows the standard loading instructions or the pilot's instructions during such activities.

3.5.4. Other Personnel

HERTM and the cargo handling crew must follow the instructions given by the HLO.

3.6. Passenger Luggage Weight Limits and Labelling

Offshore passenger luggage should be according to the helicopter capacity/type (should not exceed 13kg per individual) and should be contained in a properly secured, robust, soft-walled hold.

3.7. Passenger-/Cargo Manifest

- Whenever passengers, luggage and/or cargo are transported by helicopter a passenger/cargo manifest must be completed and accompany the helicopter.
- Manifest An official document stating the names of the passengers, their employers, the weight of the passengers and their luggage, the weight of the cargo and the destination.
- When the passenger/cargo manifest has been completed, it is considered to be an official document and therefore subject to inspection.
- The manifest shall contain the following information:
  - The full name of the passenger
  - Employer of each passenger
  - The weight of each passenger
  - The weight of the each passenger's luggage
  - Weight of cargo/luggage
  - Destination
- Any statement about weight must be the actual weight of passengers, cargo and luggage that

are weighed individually. The weight must not be estimated.
- When sending cargo from an installation to shore the HLO is responsible for checking the manifest and ensuring that it accompanies the transmittal.
- The HLO is responsible for checking that the number of passengers on board complies with the passenger manifest, and that the manifest is handed to the helicopter crew.
- The HLO should ensure that correct units of weight (e.g. lbs or kg) are used in accordance with the helicopter operators' requirements. Incorrect use of units of weight can have a major impact on the safety of an aircraft.
- The correct manifesting by the HLO of passengers, luggage and freight is essential to enable the flight crew to calculate the total weight accurately on the aircraft load sheet. Inaccurate weights on the manifest can result in adverse aircraft performance and in center of gravity limits being exceeded.
- Manifests should be prepared in a legible fashion and sufficient copies provided for retention of records for every aircraft sector of the flight. They are computer generated.

3.8. Scales for Weighing Passenger & Luggage

Scales should be provided for weighing passenger & luggage. The scales weighing platform should be large enough to handle packages securely without having to lift them off the ground more than a few inches.

Scales should be supplied with an initial calibration certificate and manufacturer's recommended maintenance schedule. The scales should subsequently be calibrated annually.

3.8.1. Location

The weighing scales is located at the GYM at a location set aside for weighing, labelling and secure stowage of luggage, ready for transport by helicopter.

3.8.2. Passenger / Luggage Weighing Procedures

Radio Operator (or delegate HSE Eng. /Barge Eng.) to take the weights for each passenger & his luggage physically on the scale & put the data in the manifest

Radio Operator initiate the manifest on computer after getting the data for all passengers & their luggage

HLO "Crane OP." receive a copy of the manifest from the Radio operator & do a double check for each passenger & his luggage.

After check & confirm the manifest; each passenger keep his bag at the Luggage keeping area.

All passenger to stay at rig designated waiting area waiting the helicopter landing

3.9. Dangerous Goods Requirements

HLO shall ensure that passengers do not carry prohibited items. All items that are intrinsically dangerous (e.g. weapons, explosives, ammunition and prohibited substances) must be excluded from carriage and No dangerous goods are allowed to be transported via helicopters.

3.10. Training

3.10.1. Radio Operator

GMDSS Training: Training required by the vessel's flag state (PANAMA)

3.10.2. HLO

The HLO shall have completed Helicopter landing Officer (HLO) and Basic Offshore Safety Induction and Emergency Training (BOSIET) course

3.10.3. Heli-Crash Team

The Heli-crash team as identified on the station bill shall have completed Basic Offshore Safety Induction and Emergency Training (BOSIET)course

3.10.4. Other Personnel

A valid HUET (Helicopter under Water) Course for 4 years

3.11. Communication

All communication with the helicopter pilots must be in English / Arabic.

Communication with Helicopter by 2 ways

- Air VHF Radio.
- Marine VHF Radio.

3.12. Helideck Operations

3.12.1. Crane Operations

All cranes for which the boom intrudes in the approach, departure or Helideck spaces shall move the boom from the area, shut down and cease to operate it for the duration of helicopter operations. Exceptions to this policy shall be approved and supervised by the OIM/PIC.

3.12.2. Clear Landing Area

Before a helicopter lands or takes off, the Helideck must be clear of obstructions, including:

- Loose tools, machinery, debris or other articles.
- Oil, gas or other flammable substance.
- Large amounts of water.
- All personnel.
- Traffic cone.
- Safety nets around the landing area, are to be properly secured and in good condition.

3.12.3. Control People

No person other than those selected based on their training for safe helicopter operations should be in the vicinity of the helicopter landing area. Access to the Helideck must be restricted.

3.12.4. Fire-fighting Equipment

The fire-fighting equipment for the Helideck must be manned by adequately trained personnel, and one member of the crew must be dressed in the fireman's suit.

3.12.5. Alert Stand-By Vessel

The standby vessel, if provided, will be informed that helicopter operations are going to take place.

3.12.6. Helicopter on the Helideck

Rotors Turning Safety Control

- The HLO shall ensure that whenever a helicopter is on the Helideck with rotors turning, no person shall, except in emergency, go on the Helideck. When cleared by pilot and HLO; all personnel shall approach in front of the helicopter, within view of the pilot, and at a safe

distance from the exhausts and tail rotor.
- Helicopter's approach/departure shall be monitored for any abnormalities and pilot is to be warned if any are observed. Radio room to be manned all the time to provide constant radio contact with the helicopter in addition to visual contact by HLO.
- Passengers shall remain seated with life jackets and wait to disembark until told to do so by the pilot and HLO.

3.12.7. Helicopter Arrivals

Passengers shall collect their baggage unless HLO indicates otherwise, exit the helicopter directly away from the side of the helicopter and then exit the heliport, or as directed, being mindful to keep clear of the tail rotor and the main rotors at the front of the helicopter.

3.13. Passenger Information

3.13.1. General

- To ensure safety of passengers, all passengers unfamiliar with helicopter operations are to be instructed in the proper procedures before boarding, observe all standard regulations, and know the emergency landing procedures. These procedures must give consideration to the type of aircraft, the lifesaving equipment provided, the environment in which the unit is operating, and any other relevant factors.
- Passengers should be present and ready to board at the scheduled departure time.
- Personnel will neither approach nor leave the helicopter until either the rotor blades have stopped turning, or a signal has been given by the pilot and HLO indicating that boarding or disembarking may be done safely.
- Always approach and leave a helicopter towards the front of the aircraft, in the pilot's normal field of vision, staying clear of the rotor blades.
- Maintain a secure grip on hand luggage and clothing, to prevent them being draw into the rotor blades
- Passengers are to follow the instructions of the pilot and the HLO at all times.
- No smoking is allowed with any aspect of helicopter flights or Helideck operations.

3.13.2. Pre-Flight

Helicopter briefing shall be given to all passengers before leaving by Helicopter

3.13.2.1. Life Jackets

A briefing on the correct way to wear the lifejacket during flight and how to prepare it for use in an emergency should be given. The life jacket instructions are carried on the aircraft.

3.13.2.2. Safety Debrief

The pilot shall brief passengers on positions of safety equipment, emergency exits and emergency procedures. It is the responsibility of passengers to ensure that they fully understand what they are told.

3.13.2.3. EN Route

During flight, passengers are instructed to follow the procedure laid down by the helicopter Operator and in particular to note the following:
- Seat Belts: Seat belt must remain fastened at all times.
- No Smoking: The "No Smoking" sign must be observed.

3.13.3. After Landing

- Passengers must remain seated after landing and only release their belts when instructed to do so.
- When cleared to leave the helicopter, avoid the tail area and any helideck hazards such as the landing net.

3.13.4. Arrival to / Departure from MODU

- Arrival to MODU
- All people has to sign in Arrival Log
- All visitors & who did not arrive on board for more than 3 months need to attend rig safety orientation by HSE Engineer onboard
- Departure from MODU:
  - All people leaving has to sign in Departure Log
  - All people has to attend the Helicopter Brief Orientation , 30 min. before leaving

3.14. Helicopter Emergency Procedures

It is vital that the HLO and his crew are aware of the established procedures to deal with any emergency, which may arise.

3.14.4.1. Examples of Emergencies

- Bad weather condition which causes emergency landing.
- Engine fire on start up.
- Crash on helideck.
- Ditching near rig.
- Rig on fire.
- Obstructed helideck.
- Partial evacuation - men in water.
- Planned evacuation.

3.15. Emergency Equipment

The Emergency Equipment shall be stored in immediate vicinity of the helicopter landing area. They shall be stored in a suitable container to keep them in good condition for immediate use

It is part of the HLO's responsibility to regularly check that this equipment is all available and in good condition as per ECAR-138 (Egyptian Civil Aviation Authority- Part 138).

3.15.1. Fire-Fighting Equipment

It is required by Regulations and Company policy that fire-fighting equipment is available at the helideck, ready for any emergency, and protected from damage.

The HLO is responsible for ensuring, before any helicopter lands or takes off, that the fire-fighting equipment is manned by adequately trained personnel, and that one person is wearing fireman's protective outfit including gloves, boots, a facemask or hood and a helmet.

3.15.1.1. ECAR-137 Helideck Foam Fire Fighting System

An ECAR-137 compliant Helideck Foam Fire Fighting System composed of a Foam Monitor System supplied by a compliant Foam Bladder Tank Skid.

3.15.1.2. Helideck Foam Monitor System

The Helideck Foam Monitor System equipped with Foam Monitor Nozzle; Inlet Pressure to each of Three (3) simultaneously operating Foam Monitor Stations

Three (3) Helideck Foam Monitor Stations shall be located on separate and distinct Foam Monitor

Platforms no greater than 50" below the helideck surface with direct stairway access to the helideck surface. A direct stairway access/escape path shall also be provided under the helideck to each foam monitor station platform.

3.15.1.3. Helideck Foam Hose Reel Stations

In addition to Helideck Foam Monitor System, two (2) Foam Hose Reel Stations shall be provided. These Foam Hose Reels shall be place in OEM Protective Cabinets and located 180o apart at the Foam Monitor Station Platforms or Helideck Access/Escape Stairway Platforms.

3.15.1.4. Helideck Foam Fire Fighting System EFWP Start Switches

Helideck Foam Fire Fighting System EFWP Start Switches shall be provided at each Foam Monitor Station and/or at the HLO Staging Position located outside the potential Helideck crash fragment zone

3.15.1.5. Lighting Equipment

- The chromaticity and luminance of colors of luminescent panels should conform to ECAR Part 139, Appendix 1, 3.4.

3.15.1.6. Windsock

4 wind socks shall be installed on the highest locations to be visible from all directions, give true wind direction. 1 wind sock illuminated for night operations.

3.16. Rig Floating Procedures

- On floating Installation in accordance with Egyptian Civil Aviation Authority (E-CAR) 137; roll, pitch, heave and heading data is passed to the helicopter operator/flight crews prior to and when requested during helicopter operations.
- Prior to landing on floating Installation, the Pilot must be advised of any change in roll, pitch, heave or heading
- Sea state and pitch, roll and heave measuring instruments will be readout in the rig control room
- Barge Engineer is responsible of passing this information to the radio operator prior to Helicopter landing for any Emergency reason during Rig floatation.

C4. Personnel Transfer between Boats (PT) and MODUs

EGPC

4.1. Scope:

Personnel Transfer (PT) between boats and Mobile Offshore Drilling Units (MODUs) is a critical activity in the offshore oil and gas industry. It involves the safe and efficient movement of personnel between various vessels in challenging marine environments. The PT procedure outlines the specific protocols, equipment, and training needed to manage this transfer within acceptable levels of risk.

4.2. Purpose:

The primary purpose of the PT procedure is to:

- Ensure the safe and efficient transfer of personnel between boats and MODUs under various weather and sea conditions.
- Minimize the risk of injuries or fatalities during the transfer process.
- Promote efficient operations by minimizing downtime associated with personnel movement.
- Comply with national and international regulations governing safe transfer practices.

4.3. Procedure:

- Personnel transfers will be controlled by the use of an adequate risk assessment and the contractors Permit to Work (PTW) system.
- The maximum wind conditions at which the transfer of passengers offshore can take place shall not exceed a consistent wind speed of 25 knots. For every transfer, the Vessel Master and Crane Operator must use their professional judgement to determine as to whether the operation can be successfully completed even if the conditions of are within the guidelines outlined in this instruction.
- Personnel shall be transferred by basket to or from a rig only when visibility is good.
- The lifting and lowering of personnel in a personnel basket shall be over open water whenever reasonably practicable.
- A safety line shall be used on each personnel basket. The crane hook shall be equipped with a safety latch.
- Each personnel basket used for transferring personnel by crane between an offshore rig and crew boat shall:
  - Have current lifting gear certification.
  - Be in good condition.
  - Provided with an adequate number of approved life preservers or buoyant work vests.
  - It shall be stored and covered when not being used.
  - The Crane Operator must hold an approved License with an approved third party competency assessment for the specific type and model crane or home country License indicating that he has been tested and passed, to handle man baskets.
  - The offshore crane operator shall not be required or permitted to transfer more than four (4) persons by personnel basket each crane trip.
  - When employees are transported by personnel basket, they shall wear approved life preservers or buoyant work vests. They shall stand on the outer rim of the basket facing inward.
  - Only light hand luggage shall be permitted inside the personnel basket when the basket is occupied by personnel.
  - Rig supplies shall not be transported by personnel basket at any time.
  - Personnel transfers at night will only take place after an adequate risk assessment has been completed and approved by the OIM.

Note: Ensure adequate lighting is available for safe operations.

C5. Rig Move Procedures

EGPC

5.1. Scope

The offshore rig move procedure outlines the safe and efficient transportation of a drilling or workover rig between different well locations or ports. This crucial process involves meticulous planning, coordination, and execution to ensure the timely and cost-effective movement of valuable equipment while minimizing risks to personnel and the environment.

5.2. Purpose

The purpose of this manual is to provide specific instructions to the OIM during a rig move. It also provides general guidelines for the conduct of marine operations.

5.3. Definitions and Abbreviations

5.3.1. Approval

Statement or signature from an authorized person that a product or service complies with specified requirements or that a defined series of planned actions may be initiated. (Hard copy, digital or soft copy)

5.3.2. Bathymetric Survey

To determine the water depth at the installation site and to ensure a safe navigable approach to the site.

5.3.3. Certificate of Approval of an Operating Location (COA)

The document which verifies that a specific Offshore Unit can be safely installed on a specified location and be safely operated within the operating envelope applicable to the unit and the planned operations. The COA will be issued by a Warranty Surveyor Office approved by the Leading Underwriters and the Chairman of the drilling contractor's company.

5.3.4. Cone Penetration Test (CPT)

To obtain soil resistance data to enable the prediction of leg penetration.

5.3.5. Grab Samples / Shallow Coring Survey

To confirm the composition of seabed sediments, and provide information on scour potential.

5.3.6. Installation of an Offshore Unit

The act of bringing an offshore unit onto a new location. For a unit requiring bottom contact 'Installation' include placement of the structure/anchors and the load tests required to verify the soil's capability to withstand the maximum forces induced.

5.3.7. Operation Plan

The Operation Specific Plan issued by the Marine Superintendent and included in the Towmaster's Instruction Letter. Information contained in the Operation Plan may be acknowledged by the Operator prior to commencement of the operation.

5.3.8. Shallow Seismic

To identify and map possible gas accumulations and to obtain information about the configuration of the soil unit within the foundation zone.

5.3.9. Side Scan Sonar

To detect any objects or obstructions and to map the seabed in order to investigate its topography, variations in sediment cover and any bed forms.

5.3.10. Soil Bore (Coring)

To provide geotechnical and lithological data to calibrate information from the Shallow Seismic Survey.

5.3.11. Tow Bridle

Main towing arrangement used in connection with the lead tug of the tow.

5.3.12. Warranty Surveyor

A company approved by the underwriters and which has been nominated and approved by the Chairman to issue the COA for installation of the offshore unit and issue verification documents (Towing Certificate, Tie down Certificate, etc.) on the accomplishment of intermediate stages of the operation.

5.3.13. Bathymetry Data

Data to determine water depth at the installation site and to ensure safe navigable approach to the installation site.

5.3.14. Grab Hazard Seismic Data

Data required to map and identify possible gas accumulations within the top whole zone.

5.3.15. Gas Samples / Shallow Coring Data

Samples to verify the composition of the seabed sediments and to support scour-potential evaluations.

5.3.16. Installation of an Offshore Unit

The act of bringing an offshore unit onto a new location. For a unit requiring bottom contact “Installation” include placement of the structure /anchors and the load tests required to verify the soil’s capability to withstand the maximum force induced.

5.3.17. Magnetometer

Instrument used to define the position of cables, pipelines and buried wrecks in the area surveyed.

The method is only used where obstructions are likely to be encountered.

5.3.18. Seabed Inspection

Inspection to confirm the absence of obstructions at locations and investigate, in detail, locations previously occupied by drilling units.

5.3.19. Shallow Seismic Data

Identifying and mapping the distribution of soil types, variations in soil layer thickness, and shallow faulting within the foundation zone. The determination of soil stratigraphy requires correlation with soil boring data within the surveyed area. Quantitative and qualitative assessment of foundation behavior cannot be performed based on shallow seismic data only.

5.3.20. Side Scan Sonar Data

Information to detect and map any objects or obstructions on the seabed and variations in seabed sediment cover and to investigate in detail seabed topography and bedforms.

5.3.21. Swathe Bathymetry Techniques

A technique developed to conduct bathymetry survey, by use of a multi-beam echo sounder.

5.3.22. Warranty Surveyor

A company approved by the underwriters and which has been approved by the Chief Executive Officer.

5.4. Responsibility

5.4.1. Personal in charge (PIC)

Is Responsible for:

- All changes in the load distribution - such as loading of casing or other tubulars, loading of bulk or sack material like barite, cement or clay, or shifting between tanks of water and/or fuel - are subject to the Towmaster's approval.
- Assurance The unit is in a sea-worthy condition
- Assurance All essential parts of the unit and equipment necessary for the safe operation are in satisfactory condition

5.4.2. Towmaster

is Responsible for:

- The navigation, operation, management, care and safety of the unit, and the safety and well-being of all personnel on board.
- operating envelope of the unit, and its personnel capacity, equipment, anchor handling, ballast arrangements, jacking performance, towing capabilities, safety and survival equipment and other essential characteristics of the unit
- Assurance Fuel and water, spare parts, safety equipment, provision, stores needed for the voyage are available and on board.
- Ensure that the stipulated crew and other personnel required for the operation are available on board.
- Ensure that the interests of the Owner, the Operator as well as the various
- Government Authorities that have a legal or justified interest are attended to.
- Approval Any crane operation either the unit is afloat or in a transit condition
- The Work Permit System implemented on the unit must be in force
- Report to the rig contractor's , on a daily basis using Marine forms and Drilling morning report form.
- In the capacity of the Person in Charge, the Towmaster holds the highest authority on board from the time the unit is signed over to him and until he signs the unit over to another authorized Person in Charge.

Note: A Towmaster participating in a rig move as Marine Advisor is not taking command, but will act in an advisory position (pilot function) to the Person in Charge who will remain fully in charge and responsible for all operations including the marine part.

5.4.3. Marine Superintendent

- Shall ensure that the requirements of this procedure are complied with.
- Responsible for maintaining this procedure.

5.5. Procedure

The general procedures for going off location are influenced by several factors and require widely differing approaches, which cannot be covered in the Operation Manual for the Mobile Offshore Unit.

Upon completion of the preparation for the rig move and after having taken command it is part of the responsibility of the Towmaster to advise the relevant authorities and/or other involved parties about the intended rig move. The requirements that pertain to the area of operation can be extensive and it is recommended to coordinate the messages that need to be transmitted with both the local shore base and the Operator's representative.

The confirmation that attending vessels are available and prepared and ready to commence the rig move must be ensured. The acceptance by the Warranty Surveyor, confirmed through a Certificate of Approval in connection with extended field moves or ocean tow/transport, is requested.

Any delays, caused by reasons which cannot be considered part of the moving off location procedure or which could give reason for dispute in relation to the contract or part of the contract, e.g. applicable rates, should be duly noted and reported either as part of the rig move report or if deemed necessary in separate documentation.

In case of changing of command from Person in Charge to another the following shall be applied:

- Recording of change in the log book or in the IADC log. It must state date and time of the change and signatures.
- Prior to taking command, the Towmaster should make a close inspection of the unit, preferable together with the attending Warranty Surveyor (when applicable)
- Ensure that securing and preparation for the rig move have been completed in accordance with guidelines contained in the Operation Manual or other instructions issued.
- Checklists covering the various sections of the unit should be completed and submitted to the Towmaster with the signature of the responsible person for each section.
- Towmaster should accept command when the inspection clearly reveals no serious deficiencies in the preparation and securing
    - Only when the inspection clearly reveals no serious deficiencies in the preparation and securing should the Towmaster accept command.

Note: Deviation from this general guideline under special conditions or circumstances will be given in form of a letter of instruction from an authorized person from the rig contractor, or the Towmaster has to prepare such documentation, explaining what caused the deviation from the guidelines and obtain approval from the Chief Executive Officer (CEO).

It must always be ensured that change of command only takes place between persons who are holding certificate of competency to take charge either by Government Authority and/or the legal representative for the owner.

5.5.1. Jacking Operation

Moving off location should only commence when the conditions are in compliance with the limitations stated in the Operation Manual. However, jacking to a more convenient air gap awaiting the final decision can be of advantage and is acceptable.

If the air gap is reduced below the minimum requirement for the area and time of the year, it must be possible to resume safe air gap within the time limit dictated by the advance warning system for excessive weather.

Units equipped with leg clamping systems or other means of securing the legs in a fixed position can commence deactivating the system in preparation for jacking prior to completion of the securing, if approved by the Towmaster and subject to no extreme weather being imminent or anticipated for the rig move period.

The period between jacked and afloat condition of a jack-up should be kept at a minimum as this is an especially vulnerable exposure position. Extra emphasis on the reducing of this period should be made where/when marginal conditions exist.

Connecting of towing vessels should take place at a safe air gap meaning that the vessels are given the optimum conditions for maneuvering without restrictions imposed by the hull.

Prior to the jack-up reaching the afloat condition (preferable when having reached a draft of 2-3 meters) the jacking should be discontinued and a thorough check of the water-tight closures should be conducted. Only if/when the water-tight integrity has been confirmed, the final jacking and leg retrieval should be attempted.

The time of confirmation of the water-tight integrity should be noted and reported in the rig move report.

The retrieval of legs and spudcans can mostly be achieved by jacking the hull to a draft in excess of the calculated displacement. The limitations allowed are stated in the unit's Operation Manual.

Where soil conditions and/or deep penetration restricts the speedy retrieval or even keeps the spudcans fixed, the high and low pressure jetting systems arranged on the spudcan should be utilized.

When attempting to utilize the low pressure system (bottom of spudcan) it could be difficult to obtain passage of water as the nozzles could be plugged by mud or clay. The application of high pressure on the low pressure system to obtain passage should be attempted with utmost caution. Any application of pressure exceeding the design criteria of the system will have to be approved by the Marine Superintendent or in his absence the CEO.

The freeing of one leg at a time can be of advantage as the water flow can be maintained at a higher capacity, however, caution should be exercised when this approach is used to avoid unnecessary strain in the leg or leg guides resulting from a hull swinging out of level when one leg breaks free.

Alternative methods to free legs and spudcans, should the use of excess draft and jetting fail, could e.g. be:

- The use of drill pipe being lowered over the side and washed down beside the spudcan and supplied from the mud pumps with seawater.
- The application of pull by towing vessels can also contribute to achieving the required force to break free.

However, regardless of what alternative attempts are being used, extreme caution and extraordinary care should be taken to instruct personnel and secure the work area in the best possible way.

Guidance and information that could assist in evaluating the risk when using alternative methods, should be tried obtained from any available source either locally or from the Marine Superintendent.

When retrieving the legs it is recommended to have an observer placed at the leg well to give immediate warning to the control room about any damages or hazards that can be seen. This could be loose pipes, damaged bracings or debris caught in the leg structure.

Special attention should be paid to the accumulated soil on top of the spudcan when approaching the final stage of retrieval. Especially when deep penetration has been achieved in clay, the accumulated amount could become critical and result in damage to the hull.

Close observation of power consumption or pressure indicators at the control stations can likewise indicate that a hazardous situation is under development.

Accumulated soil on top of the spudcan can be attempted washed off by utilizing the high pressure system installed (top of spudcans) or by towing the legs in a partly lowered condition.

The Towmaster should advise the towing vessels of his decision and position of the leg/spudcan enabling the required compen¬sation in safe navigation due to excessive draft, reduced speed or drifting of the tow due to current.

Where stiff clay has accumulated on top of the spudcans it can be required to wash with water hoses or even high pressure mud guns. The use of high pressure equipment requires extreme caution and it is recommended to mount/secure the guns in fixed position at the leg wells.

5.5.2. Use of Towing Vessels

Assisting vessels should be utilized to the extent possible to keep the unit in position during the leg retrieval. Where only one assisting vessel is available the most convenient position should be chosen taking into account the wind, sea and current conditions during the period of time needed.

During very short field moves the assisting vessel(s) can be kept in their position at the starboard or port quarter, however, if reconnection to assist at the bow is required, this should only be attempted at a safe distance from any obstructions in the area.

During reconnection of the towing vessels the unit should be kept at a stable position without making headway.

The towing vessels should not commence towing at full power before the legs have been fully retrieved or the Towmaster has accepted this.

The time period for going off location is considered completed when the unit is at a safe distance from location of departure and towing vessel(s) are connected ready for tow.

The time will be noted as commencement of tow (start of sea passage).

The time when sea passage is commenced should be logged on the attending vessels with the clear understanding that the Master of the towing vessel or where more than one vessel is used the Master of the lead tug, has taken the full responsibility of the navigation in accordance with the applicable legislation.

This includes coordination of the towing vessel's pull and change of heading and maneuvering in compliance with the collision regulations.

5.5.2.1. Jack-ups

- The towing vessel should always be connected to the main bridle prior to attempting going on the water and retrieving legs. The vessel should be ready in position to pull as soon as the unit is afloat.
- When moving off platform installations the application of pull should be exercised prior to coming afloat to ensure that neither drift nor setting to the stern takes place; this to avoid any contact between the unit and the platform.
- When more than one vessel is used for towing, the most powerful or suitable vessel should be placed on the main bridle and be the lead tug.

5.5.2.2. Use of Anchors

- The use of anchors for moving the unit off location is not considered a standard requirement but can be advantageous where special circumstances warrant this or it is required by the Operator.
- However, when moving slot type jack-up units off platforms the stabilizing effect of anchors can assist the clearing of the slot by use of the stern anchors and the Towmaster should consider this.
- The anchors must always be secured in their anchor racks during field moves. In connection with extended field move extra securing with chain or wire together with quick release should be added.
- For ocean tow and upon request by underwriters' Warranty surveyor for extended field move in adverse weather areas, the anchors should be removed from the racked position and stowed on deck in a secured manner.

5.5.3. Transit

The period to be considered as towing period will be the time from completion of going off location to commencement of the going on location time.

During the towing period the Towmaster has to ensure that:

- The unit is safely towed and navigated, and that the unit's position, weather and sea conditions are recorded at regular intervals.
- The loading condition and stability criteria are maintained throughout the voyage,
- Rotation of a watch is established keeping control with water-tight and weather-tight closures.
- Necessary drills and exercises to maintain the crew ready and prepared for contingencies are held,
- Details and information concerning the voyage required by authorities or relevant entities are submitted,
- Proper seamanship is exercised in every respect.

Further, it is the Towmaster's responsibility to plan and utilize - together with the unit's senior personnel - that time available, which is not needed for maintenance or keeping watch and other tow related duties, is utilized as effective as possible by the crew for maintenance and overhaul of the unit and her equipment.

5.5.3.1. Watch Keeping

It is of utmost importance that radio communication is maintained on a 24 hour turnaround with the attending vessels.

During the towing a sea watch and look-out, enabling an around the clock (24 hours') control of the safety and integrity of the unit, has to be maintained in all respects as dictated by regulations and proper seamanship.

The duties of the sea watch will be to maintain the needed power supply and other necessities as dictated by the circumstances, and be prepared to respond to any emergency that might develop.

The deck watch should maintain communication with the attending vessels and establish a routine tour on the unit to check that the water-tight or weather-tight integrity is maintained, that securing is maintained and that resecuring takes place should this be needed.

Observation of the navigational lights and signals are exhibited properly should also form part of the tour.

The towing gear must, weather permitting, be inspected for chaffing or other damage that could have an unwanted impact on the safety of the established towing connection.

The tour should as a minimum take place at an interval of 4 hours, however, where deemed necessary by the Person in Charge a higher frequency should apply.

The observation for any fire or any potential danger of fire is to form an important part of the roundation, and the route around the unit should be planned in such way that all risk areas are visited.

The watch should, during the tour, carry a portable radio enabling an immediate contact with the control room.

Note: In certain areas the increased activity by pirates warrants the use of extra personnel for the sea watch. This should be included in the planning of the day-to-day work to ensure that excessive working hours are avoided and alertness is at the optimum at the most crucial hours.

As part of the daily routines the Person in Charge or the substitute should keep record of all occurrences or observations that could be of interest to the safety of the unit.

This includes but is not limited to:

- Daily control/sounding of all spaces/tanks below deck.
- Daily calculation of the water and fuel supplies.
- Daily updating on the stability to ensure that the unit remains within the limitation in accordance with the approved criteria.

Any shortcomings observed should if at all possible be corrected as soon as the situation permits.

Should supplies for any reason become insufficient during the voyage the Person in Charge must consider alternatives like obtaining replenishment or introduce rationing

5.5.3.2. Weather Observations

The motion characteristics of the vessel should be observed closely and where/when weather limitations are approached, correctional steps must be taken e.g. by altering the heading of the tow, changing the pull exercised by the towing vessel(s) or installing changes in own propulsion.

Should the unit be unable to maintain the motions within the values derived from the critical motion curves, steps should be taken to minimize the danger for the crew and damages to the unit.

The influence on tows by weather and the dangers of adverse conditions are well-known and documented, thus the observation of weather and especially the changes compared to predictions can give trained observers early indication of potential oncoming risk.

The observation and proper recording of weather data can thus become an important issue and should be given the proper attention.

As a minimum a record at an interval of 4 hours of the following should be maintained during rig moves:

- Unit's position and speed.
- Wind force
- Wind direction
- Sea height
- Sea period
- Swell height
- Swell period
- Barometric reading
- Temperature
- Cloud observation

The observation should be compared with the forecast received from the weather bureau and where development is in contradiction to the forecast it is strongly recommended to take contact with the bureau for verification or clarification.

Alternative weather forecasting sources can be sought to obtain further details.

Whenever adverse weather (gale warning) is forecasted for the expected route, the frequency for observation should be increased.

When utilizing special routing forecast it is necessary to support the predictions by reporting the actual weather experienced. It should thus be endeavored to arrange for one daily submittal (noon observation) of the relevant observation to the routing service.

Subtropical or tropical cyclones: whenever a situation requires the rig move of a unit through areas or during periods where these storms pose a risk, the special cyclone procedure adapted for the area should be adhered to and arrangements with the routing forecast office should be reflecting the increased risk.

5.5.3.3. Position Reporting

The mobile offshore units are equipped with one GPS device, permitting the Towmaster to ascertain the position of the unit at all times. Otherwise the towing vessels or a position service company on board can provide this service.

Supplemented with observations received from the towing vessel(s) and the visual observation from the Mobile Offshore Unit, the Towmaster will be able to form an overall picture that should enable a proper and safe manoeuvring between the locations.

The position of the tow should be recorded at a minimum interval of six (6) hours' including information about the means for observation e.g. radar-decca-celestial etc. or dead reckoning.

Where means exists on the Mobile Offshore Unit to track or control observations these should be utilized to the extent possible and any deviations observed should be brought to the attention of the Master(s) of the towing vessel(s), and clarification be obtained.

During extended field move or ocean tow the daily noon position together with other information, as detailed on the report form in section 5 must be forwarded to the Chief Executive Officer.

Where Operators or local authorities require advice about the transit of Mobile Offshore Units and have instructed the Towmaster either directly or through the local shore base, the Towmaster will ensure that data as requested is submitted either directly or arranged through alternative routes.

Even if such local reporting is not requested it is advisable to report the intended move and frequent position to the local authorities that could have an interest, e.g. the Rescue Centre, the coastal radio stations or the harbour authorities, especially where the approach is restricted.

Other hazards like close passage of airfields or interference of heavily trafficked routes where maneuverability is limited should have the attention of the Towmaster, and issuance of navigational warning on radio frequencies can be advisable. (Preferably VHF transmittal).

5.5.3.4. Crane Operation

Crane operation during the rig move should be limited to an absolute minimum, and as a general rule the cranes should remain in the support structure secured against vertical or lateral movement.

Any use of the cranes during a rig move has to be approved on a case-to-case basis by the Person in Charge (Towmaster).

Where the situation allows the use of a crane, this should be limited and the return to the support structure should be executed immediately.

A crane should under no circumstances be left unattended if operated during a rig move.

For ocean tow and where required by underwriters' Warranty surveyor's recommendation for an extended field move, the cranes have to be secured to avoid revolving.

When crane operation is required over the side during rig move, e.g. in case of personnel transfer (injuries) or if equipment has to be transferred from attending vessels, the Mobile Offshore Unit has to be stopped or kept into the wind without making headway.

Attention to the dynamic forces and maneuverability of the vessel will always have to be evaluated carefully prior to attempting any crane operation while under tow.

5.5.4. Going on Location

Going on a location, after having completed the towing part of a rig move, will commence when the Towmaster discontinues the sea passage or takes full charge of the maneuvering of the tow, whichever comes first.

Before commencing the final approach, certain items have to be checked or verified e.g.:

- Positioning equipment installed and confirmed operational.
- Location marking confirmed placed in position as agreed for both location and obstructions.
- Auxiliary vessels and/or assisting tow/anchor handling vessel(s) in readiness.
- Platform(s) advised of approach operation and confirmation obtained that 'hot' platform(s) is(are) ready to shut-in.
- Weather and sea conditions within limitation as stated in the Mobile Offshore Unit - Operation Manual.
- Acceptance from the Operator is obtained for commencing location approach.
- The unit's crew and other personnel are instructed about duties and advised about the operation.

5.5.4.1. Conditions on Location

Whenever approaching the final location, whether an open sea location or a platform or other installation, the Towmaster must have in his possession the Location Approval issued by the underwriter appointed Warranty Surveyor.

The details contained in the same should be checked and verified and especially attention should be given to any recommendations or limitation incorporated in the approval.

The Towmaster should have verification that a location survey has been conducted within the area stipulated for stand-by and (jacking) operation. This survey should not be older than six months and should state that no obstructions posing a hazard is within the surveyed area.

In case of vessels being observed within the area of final location or in the approach channel, radio warning about the imminent approach shall be broadcasted with a request to clear the area.

If available, a stand-by or auxiliary vessel could be dispatched well in advance and clear the area for the approach of the Mobile Offshore Unit.

Verification of tidal or other current should be requested if available.

When other vessels are engaged in authorized operation within the location area (safety zone) or the anchor pattern directions and approach channel, the coordination necessary must take place. The Operators Senior Representative should arrange for the coordination, and if deemed appropriate, details have to be planned between the involved parties.

5.5.4.2. Approach

The approach of a wildcat location is to take place with the unit heading on a predetermined true heading based on the prevailing or extreme weather conditions that are existing in the area.

When the operation of helicopters and supply vessels can be critical on the preferred heading and a request is received from the Operator for alternative heading, due consideration should be given and acceptance granted, however, only where the limitations of the units safety and stability are not reached.

When the final approach of the location is to take place, the Towmaster has to ensure that the required number of generators is aligned for sufficient power supply, and where available a spare generator should be on stand-by for immediate use, should failure of any one generator occur.

The tow should reduce the speed in time for the re-positioning of the towing vessel and the lowering of the legs.

The crew should be alerted and detailed instructions given to the supervising personnel.

Positioning equipment and jacking system should be checked and confirmed in satisfactory operational condition.

The spudcans should always be kept sufficiently above the seabed during the final approach to ensure a clearance of 5 meters above any seabed obstructions or to compensate for inaccuracy in the water depth expected.

The final lowering of the legs and engagement of the seabed with the spudcans should preferably be executed with the unit making no or only very limited headway. Where some headway is unavoidable it should preferably be ensured that first bottom engagement is made by the two stern legs, thus diverting the stress and impact on the single leg. This procedure is not applicable, when approaching stern first towards a platform.

Even though the approach of a wildcat location generally does not require the greatest accuracy in positioning, it might be necessary to use anchors for the final and accurate positioning.

Should this be required, the Towmaster has to plan this in details and take into account the number and size of the vessels available and other conditions like e.g. wind/sea/ current and tidal development.

Note:

- Approach of a wildcat location with one or even two vessels could necessitate the use of stern anchors for stopping headway or drifting off location. In these situations it could be of advantage to have an anchor ready and the anchor buoy trailing on the final approach.
- Positioning at platforms or reentry of subsea locations almost without exception require the deployment of anchors for safe and accurate final positioning.
- This operation will have to be planned in details with the involved parties and the as is situation has to be taken into account at the time of operation.
- However, as a general rule, the unit should be pinned or positioned temporarily in an area approx. 100 x 200 m off the final location on a heading preferably close to the intended final true heading.
- In this position the unit will run anchors, await the allowable weather conditions and where required await shut-down/final approval for the approach.

Warning:

- Experience has shown that when a jack-up Mobile Offshore Unit is in transit from afloat to bottom supported condition, extreme gyrating of the hull may occur, especially where low but long swell exists.
- To avoid damage to both the unit and the installation from contact, the max.
- Safe distance with due consideration of drill floor reach of wells should be attempted.
- Where only marginal distance can be maintained it can be advantageous to have a towing vessel connected and pulling away from the installation thus reducing the gyration. Also the optimum jacking speed should be used to minimize the period of time where this phenomenon is apparent.

5.5.4.3. Anchor Operations

The running of anchors should take place based on a pre-agreed anchor pattern which has the acceptance of the Operator and the Warranty Surveyor.

The anchor pattern should, whenever possible, be laid in such a way that crossing of pipelines, cables or other subsea obstructions are avoided. However, if necessary the maximum safe distance from such obstructions must be obtained.

Close attention should be paid to the fact that the anchor handling vessel is maintaining sufficient pull to ensure vertical clearing of pipelines and cables while running anchor moorings.

In case of interference with already established anchor pattern by another offshore unit, it must be ensured that deployment of own anchors does not interfere with the operation of the other unit.

When running anchors it has to be ensured that the only equipment used is equipment which has been checked to be in a good operational condition prior to use and the anchor wire or chain should be examined for any damage like broken wire parts or loose/missing studs in chain etc.

If, due to the local circumstances, the exact positioning of anchors is of paramount importance, it could be required to have the location marked by buoys or use highly accurate positioning equipment.

The Towmaster should ensure that proper recording is kept on all anchor operations. The recording should include position, distance and headings during deployment, thus making the search for equipment lost on the seabed, whether intentional or by mishap, as easy as possible.

For the exact general pattern of deployment of anchors we refer to the Mobile Offshore Unit's - Operation Manual or special mooring analyses that have been made for the area of operation. Either on request from the Operator or by other authorized parties

When jack-up Mobile Offshore Units have deployed their anchors, prior to going afloat for final positioning, the winches have to be pulled to stalling capacity to ensure that proper holding force has been obtained.

If this is not the case, resetting of the anchors should be attempted with slight alteration of distance and/or heading. If this does not result in proper hold, the use of piggy-back anchors should be contemplated.

As an alternative and where piggy-back anchors are difficult to obtain, the use of towing vessels afloat or at anchor could, together with the unit's own anchor but at reduced holding capacity, give ample resistance to achieve a sufficient pull to move the unit safely onto location.

Note:

- Where pipelines and/or cables have been crossed with the anchors, dragging of anchors can result in costly legal proceedings
- If damage could be claimed. It is thus of serious consequence if the Towmaster has failed to keep an accurate record of the circumstances around the anchor handling etc.

Any observed discrepancy should be noted in a statement of fact and signed by the Operator's representative

5.5.4.4. Preloading

Mobile Offshore Units of the jack-up type have to be preloaded to the minimum required bottom pressure as stated in the unit's Operation Manual.

Preloading should only commence when the final acceptance of the location has been received by the Operator's representative.

This preload should be based on the year-round operation requirements, and only where special circumstances have been accepted prior to going on the location, a deviation can be incorporated in the location approval.

Preloading should take place with a minimum air gap, taking into account the tidal influences and the actual and expected weather criteria during the preload period.

When an acceptable minimum air gap cannot be maintained, the Towmaster should evaluate the overall situation and, if deemed necessary, abandon the operation and await improved condi¬tions.

If, due to weather condition, a preload operation has to be abandoned, the unit should be jacked to a height which ensures that the waves will not reach the bottom of the hull.

The unit should thus maintain alertness to any change in the weather and be prepared to adjust on short or immediate notice to any development in the wave action.

The preload should preferably be taken on board in an uninter¬rupted sequence to avoid thixotropic effect (building a crust). This effect has relevance in soil of clay or clay nature and should be considered a high risk for punch-through.

Should the effect have been build up, it could be necessary to abandon the location or reposition the unit on virgin soil.

Preload should be taken on board in a preplanned sequence ensuring equal distribution on the legs. It is recommended to prepare a written instruction to the supervisor in charge for the preloading with clear details as to tank order and pumping speed.

When the Mobile Offshore Unit is positioned close to a platform and where a potential risk of punch-through/rapid penetration is apparent, extra care with the taking on of preload should be exercised. In this context it could be advisable to give the forward leg a slight headload, thus forcing the unit healing to the bow, should unequal or rapid penetration occur.

This could reduce the risk of contact between unit and platform and minimize possible damage.

Taking on preload, while the unit is afloat or only pinned lightly and consequently jacking with partial or full preload, should be attempted only if the soil should require this procedure and the Unit Operations Manual allows this way of preloading.

In special situations, e.g. when knowledge concerning soil gives reason to believe that rapid penetration could be at high risk, it is acceptable, after consultation with the Warranty Surveyor, to use the method.

Note:

- The “In Water Preload” method should never be attempted for time-saving reasons only.
- An alternative way of preloading in risky soil, is to preload one leg at a time. The dynamic lateral forces are reduced during a situation with rapid penetration, provided the preload is dumped before the next leg is commenced. This method could also be used afloat.

5.5.4.5. Jacking to Final Gap

After completion of the preloading procedure and a satisfac¬tory result of the settlement period has been recorded, the preload water will have to be dumped before commencing the final jacking to the minimum required air gap as stipulated in the location approval.

The air gap can be adjusted to a higher figure to achieve improved stress distribution by placing bracing or connecting points in or close to the leg guides.

Likewise it is permitted to adjust to a higher air gap for fixed installation levels or conductor pipe measurements. The final position of the unit, however, should never exceed the approved maximum allowable air gap. The required leg reserve should not be used without the explicit approval from the Marine Superintendent and Warranty Surveyor in attendance.

During the jacking the hull should be kept at an even level, but as a minimum within the allowable 0.3 degree where even level is not achievable.

When reaching the final air gap, the hull must always be placed at an even level and the level alarm should be checked for workability and be left in operational position.

Final measurements on the leg extension are to be made and noted in the appropriate records.

Note:

During final jacking the Towmaster must ensure that the raw water supply system is under strict surveillance by a responsible supervisor equipped with a communication means to the jacking control room for immediate alarm to stop jacking.

This is required in order to avoid damage to the piping or cables in the raw water supply system

5.5.4.6. Signing over the Command

When returning charge of the Mobile Offshore Unit, the Towmaster will ensure that proper recording stating date and time of the change of command is made. The record should be signed by both the relieved and the relieving Person in Charge.

Generally this change will take place when the Mobile Offshore Unit is accepted:

* Jacked to final air gap and accepted by Operator and Underwriters' Warranty Surveyor as being on a safe location, ready to commence (drilling) operation.

It is generally the duty of the Towmaster to ensure that the anchors have been retrieved and that the substructure is skidded out to the operational position. However, where circumstances warrant, this task can be delegated to the Person in Charge after change of command.

5.6. Requirements for Soil Bore (coring) Operations from a Mobile Offshore Unit

The Marine Superintendent/Towmaster, shall prepare an Operational Procedure Plan for the attending Towmaster, which shall ensure compliance with the requirements listed below. This Plan shall be approved by the CEO

The list of requirements is as follows:

- A length of weather window deemed adequate to complete the operation is forecast.
- The amount of time planned for the coring operation is minimised (e.g. through careful planning etc.).
- The unit remains in a sea-fastened condition.
- If shallow gas is expected, the heading of the rig shall, wherever possible, be into the prevailing winds and all anchors shall be run, tensioned and manned by personnel in radio contact with the Towmaster.
- If shallow gas is expected, the stern anchors shall be prepared for free wheel mode, and engine cooling water shall be arranged from the internal tank systems e.g. drill water tanks.
- The main towing vessel will remain connected to the bow of the unit and, where possible, be heading into any prevailing wind and current. It shall fully operational and ready to move the unit off location, if required.
- The drill string may be sacrificed in the event of a rapid departure from location.
- The cantilever shall be skidded out to permit the rotary table to clear the hull (if required).
- An operational - safety meeting shall be held with all the crew members and 3rd party companies involved.
- Sufficient stock of drill water, barite and bentonite for the core/drilling operation shall be available on board the unit before the operation is initiated.
- The operation shall be suspended if the weather deteriorates. A suitable safe stand by location must be available, with a COA issued, or an acceptable shelter of refuge available e.g. behind an island.
- The drilling/moonpool area to be observed by a person with radio contact to the Towmaster.
- The Towmaster shall be in charge throughout the entire operation.
- The jacking control room shall be manned during the entire coring operation and radio contact with the Towmaster maintained.

- Power to the jacking systems and anchor winches shall be maintained during the entire coring operation.
- On completion of the coring operation and prior to any jacking operation, the cantilever shall be skidded to stowed position and secured in accordance with the Operation Manual.
- All other possible, relevant contingencies to enable the unit to promptly move off location, in case of lost buoyancy or power shut down (e.g. due to shallow gas), must be considered and implemented where deemed necessary.

Any deviations from the above requirements shall be documented, with an explanation of such, on the Operational Procedure Plan.

The procedures devised by the Marine Superintendent/Towmaster for the above activities are subject to the Warranty Surveyor's approval.

5.7. Location Appraisal

Prior to any rig move, a Location Appraisal shall be prepared. This Appraisal shall contain the following information, as a minimum:

- COA issued by the approved warranty surveyor.
- Soil evaluations of location of arrival and including standby/emergency jacking locations (if applicable).
- Penetration analysis
- Report of seabed survey.
- Towmaster's Letter of Instruction.
- Operation Plan (Rig move Procedures).
- Copy of sea charts and site-specific offshore charts.
- Relevant drawings.

5.8. Change of Command

Prior to change of command from Person in Charge to attending Towmaster a checklist "Change of Command" shall be prepared and completed.

5.9. Rig Move checklists

5.9.1. Prerequisites

Criteria (Check N if criteria is not met)	Y / N	Action to take if not compliant
The Rig Move Procedure issued by the Marine Superintendent and approved by the Rig Contractor is in hand of the attending OIM. All information required for the conduct of the move is in hand.		OIM will request a Deviation Permit issued by the Rig Contractor. Commencement will not be initiated before this item is clarified.
The information and instructions contained in the Rig Move Procedure have been confirmed.		OIM will request a Deviation Permit issued by the Rig Contractor. Commencement will not be initiated before this item is clarified.
The Location Approval Certificate issued by the Warranty Surveyor Office is in the hand of the OIM.		OIM will request a Deviation Permit issued by the Rig Contractor. Commencement will not be initiated before this item is clarified.

Criteria (Check N if criteria is not met)	Y / N	Action to take if not compliant
Permits & notices required by the Continental Shelf Authority for the operation concerned are complied with.		OIM will request a Deviation Permit issued by the Rig Contractor. Commencement will not be initiated before this item is clarified.
The rig operator representatives designated to attend the move are available.		OIM will request a Deviation Permit issued by the Rig Contractor.
The requirements for attending vessels and services stipulated in the Rig Move Procedure, the CoA, by the Flag State, Continental Shelf Authority must be complied with.		OIM will request a Deviation Permit issued by the Rig Contractor. Commencement will not be initiated before this item is clarified.

5.9.2. Commencement

Criteria (Check N if criteria is not met)	Y / N	Action to take if not compliant
The Rig Operating Manual approved by the Flag State/Classification Society is available to the OIM.		Issue a Nonconformance Report to the Rig Contractor. If the nature of the noncompliance affects the safe conduct of the marine operations OIM will request for a Deviation Permit issued by the Rig Contractor.
The Flag State & Continental Shelf Authority minimum manning requirements are complied with. Alternatively proper dispensations are available.		Issue a Nonconformance Report to the Marine Superintendent, or in his absence the Rig Contractor.
The pertaining certification requirements issued by the Flag State & Continental Shelf Authority must be complied with. Alternatively proper dispensations are available.		Issue a Nonconformance Report to the Marine Superintendent, or in his absence the Rig Contractor.
Two independent weather centers have identified and documented a suitable weather window; enabling the safe lowering of the unit on location of departure, transit from location to location, preloading and safe jacking of the unit on the location of arrival. One of the weather centers should be an internationally recognized institution. Arrangements are made for the Towmaster to receive regular forecasts for the duration of the operation.		OIM will request a Deviation Permit issued by the Rig Contractor.

Criteria (Check N if criteria is not met)	Y / N	Action to take if not compliant
All equipment and systems pertaining to the move have been verified operational on checklists completed by the responsible section heads on board the Rig. Alternatively notes from the Classification Society and/or Rig Contractor provide information on any operating restrictions.		Issue a Nonconformance Report to the Rig Contractor.
The stability parameters for the rig are within criteria limits stipulated in the Rig Operation Manual for the anticipated operation.		OIM will request a Deviation Permit issued by the Rig Contractor. Operations will not proceed before item is resolved.
Attending vessels and services have been inspected for compliance with the requirements stipulated in the Rig Move Procedure, CoA, Panama Flag State and Continental Shelf Authority requirements.		Issue a nonconformance Report to the rig contractor's Chairman. OIM will request a Deviation Permit issued by the Rig Contractor. Commencement will not be initiated before this item is resolved.
The OIM has conducted an instructional meeting for all personnel concerned. The minutes of the meeting including list of attending personnel will be attached to the Rig move report.		OIM will request a Deviation Permit issued by the Rig Contractor.
All pre-move requirements stipulated in the CoA are complied with. This includes the nomination of a suitable number of standby locations.		OIM will request a Deviation Permit issued by the Rig Contractor. Operation will not proceed before this item is resolved.
The OIM is aware of the Quality Management System procedures pertaining to Work Permits, Personnel on Board reports, Emergency Response organization and procedures.		OIM will familiarize himself with the procedures relevant to the operation and his function.

5.9.3. Departure

Criteria (Check N if criteria is not met)	Y / N	Action to take if not compliant
A Towing Certificate verifying the tie down of loose items, the watertight integrity and the condition of the attending vessels has been issued by the attending Warranty Surveyor		OIM will request a Deviation Permit issued by the Rig Contractor.
Sea & weather conditions are within the criteria specified in the Operating Manual for jacking into the water.		OIM will request a Deviation Permit issued by the Rig Contractor.
Attending vessels and services performs according to the specified criteria.		OIM will request a Deviation Permit issued by the Rig Contractor.

Departing From a Fixed Installation. Permission obtained from the Installation Manager/operator Representative to commence transit.		OIM will request a Deviation Permit issued by the Rig Contractor.

5.9.4. Transit

Criteria (Check N if criteria is not met)	Y / N	Action to take if not compliant
Weather forecasts confirm availability of suitable weather window for the completion of the anticipated transit.		Issue a nonconformance report to the Marine Superintendent. OIM will request a Deviation Permit issued by the Rig Contractor for considering deviation towards a nominated standby location.
Attending vessels and services performs according to the specified criteria.		Issue a Nonconformance Report to Marine superintendent. OIM will request a Deviation Permit issued by the Rig Contractor.

5.9.5. Approach

Criteria (Check N if criteria is not met)	Y / N	Action to take if not compliant
Approaching a fixed installation Permission to approach has been obtained from the Installation Manager/Operator Representative.		OIM will request a Deviation Permit issued by the Rig Contractor.
A suitable weather window for the final stages of the move has been verified by the forecasts received.		Consider deviation towards a nominated stand by location.
All equipment and systems pertaining to the positioning/elevation of the rig has been verified to be operational on checklists completed by the responsible section heads on board the rig.		Issue a Nonconformance Report to the Rig Contractor. OIM will request a Deviation Permit issued by the Rig Contractor.
Attending vessels and services have been confirmed operational.		Issue a Nonconformance Report to the Marine Superintendent. OIM will request a Deviation Permit issued by the Rig Contractor.
Location markers and navigation equipment for the approach are operational. Seabed confirmed free of unplanned obstacles and suitable for carrying out the anticipated operation.		OIM will request a Deviation Permit issued by the Rig Contractor.

5.9.6. Arrival (including Positioning / Preloading)

Criteria (Check N if criteria is not met)	Y / N	Action to take if not compliant
Actual arrangements at location (e.g. lay out of fixed installations) are according to the information provided in the Rig Move Procedure.		Issue a Nonconformance Report to the Marine Superintendent. OIM will request a Deviation Permit issued by the Rig Contractor.
Final position accepted in writing by the Rig Operator Foreman.		OIM will consult Marine Superintendent.
Actual penetrations encountered are within the following limitations. The maximum acceptable measured penetration deviation from the predicted penetration in the CoA is 2 meters + 10% of the predicted penetration. The maximum penetration variation between legs is 2 meters + 10% of the highest actual penetration measured on one leg.		OIM will request a Deviation Permit issued by the Rig Contractor. Operations are discontinued until this item is solved, and authority to proceed, has been received from the Rig Contractor.
Leg/hull structure stress parameters (such as RPD) are within the criteria stipulated in the Operation Manual.		OIM will request a Deviation Permit issued by the Rig Contractor. Operations are discontinued until this item is solved, and authority to proceed, has been received from the Rig Contractor.
The mooring operations / elevating operations are conducted in accordance with the procedures specified in the Operating Manual and Item 03 and 04 of this Checklist.		Issue a Nonconformance Report to the Marine Superintendent. OIM will request a Deviation Permit issued by the Rig Contractor.
The preload/mooring-tensioning program is complied with in accordance with the requirements stipulated in the CoA and Operating Manual.		OIM will request a Deviation Permit issued by the Rig Contractor. Operations are discontinued until this item is resolved.

5.9.7. Prepare for Operation

Criteria (Check N if criteria is not met)	Y / N	Action to take if not compliant
The operator Foreman has declared final acceptance of airgap / operating draft on location.		OIM to consult the Marine Superintendent.

5.9.8. Port Operations

Criteria (Check N if criteria is not met)	Y / N	Action to take if not compliant
Check lists Prerequisites Commencement has been completed.		OIM will request a Deviation Permit issued by the Rig Contractor.
Port Authority representatives have attended a planning meeting.		OIM will request a Deviation Permit issued by the Rig Contractor.
Documentation pertaining to Immigration and Customs clearance is available.		Issue a Nonconformance Report to the OIM. OIM will request a Deviation Permit issued by the Rig Contractor.
A Port Contingency plan including call out and notification lists has been prepared and implemented.		Issue a Nonconformance Report to the Marine Superintendent. OIM will request a Deviation Permit issued by the Rig Contractor.

5.9.9. Heavy Lift Vessel/Barge Operations (Dry Tow Operations)

Criteria (Check N if criteria is not met)	Y / N	Action to take if not compliant
A Transport Manual approved by the designated Warranty Surveyor and Marine Superintendent or in his absence the Rig Contractor is available.		Issue a Nonconformance Report to Marine Superintendent. If the nature of the noncompliance affects the safe conduct of the marine operations OIM will request a Deviation Permit issued by Rig Contractor.
Check lists Prerequisites Commencement has been completed prior to load out/off.		OIM will request a Deviation Permit issued by Rig Contractor.
Port Authority representatives have attended a planning meeting.		OIM will request a Deviation Permit issued by Rig Contractor.
Documentation pertaining to Immigration and Customs clearance is available.		Issue a Nonconformance Report to the OIM on board. OIM will request a Deviation Permit issued by Rig Contractor.
A Contingency Plan for the riding crew including call out and notification lists has been prepared and implemented.		Issue a Nonconformance Report to Marine Superintendent. OIM will request a Deviation Permit issued by Rig Contractor.

Criteria (Check N if criteria is not met)	Y / N	Action to take if not compliant
It has been confirmed by inspection conducted by the designated Warranty Surveyor and the Towmaster that the Heavy Lift Transport Vessel complies with the requirements stipulated in the contract and the Transport Manual.		Issue a Nonconformance Report to Marine Superintendent. If the nature of the nonconformance affects the safe conduct of the operation, the OIM will request a Deviation Permit issued by Rig Contractor.
The designated Warranty Surveyor has issued a certificate verifying that the sea fastening arrangements and the stability parameters for the combined tow is in compliance with the criteria stipulated in the Transport Manual.		Issue a Nonconformance Report to Rig Contractor. If the nature of the non-compliance affects the safe conduct of the operation the OIM will request a Deviation Permit issued by Rig Contractor.
The motion and stability parameters during the transit are within the limitations stated in the Transport Manual.		The OIM issues a Nonconformance Report to the Marine Superintendent.

Section D : Asset Integrity Management Requirements

D1. Equipment Inspection And Integrity

EGPC

1.1. Scope

This section of EGPC guidelines will be applied to all drilling and workover rigs working within the Egyptian Oil and gas sector

1.2. Purpose

The purpose of this Section is to define the Egyptian Petroleum Ministry requirements for keeping the all EGPC affiliated rigs equipment serviceable in good and safe operating condition, in addition to, carrying out rig equipment inspections for all drilling and workover rigs working within Egyptian Oil and gas sector following the EGPC requirements ,international applicable standards and different OEM recommendations in order to ensure the integrity of equipment through a common Inspection Standards.

The inspection frequencies and scope are defined in this Chapter represent EGPC "minimum requirements" which cannot be exceeded

Under no circumstances EGPC inspection frequencies and scope should never be changed unless change made by OEM or other applicable standards "latest versions"

1.3. Responsibility

1.3.1. EGPC/EGAS Drilling and workover HSE Dept.

- Responsible to ensure that all requirements mentioned in in this guidelines are carefully implemented through predetermined audit and inspection plan
- Responsible for reviewing and updating the guideline as a custodian of this guidelines
- Responsible for assigning a special committee from its affiliated companies for performing rigs Auditing and updating this guideline

1.3.1.1. Rig Operator's chairman of the board and Gen. Mgr.

- Responsible to ensure that all requirements mentioned in this guidelines are carefully implemented and support the implementation of all HSE policies
- Responsible to provide strategic and operational financial support in achieving the organizational goals of providing high quality, integrated health and personal social services.

1.3.2. Rig Operator's Operations Gen. Mgr.

- Responsible to ensure that all requirements mentioned in this guidelines are carefully implemented through predetermined acceptance audit and inspection
- Responsible to assign an appropriate concerned authority OR Approved qualified third party for performing acceptance Audit
- Ensure that HSE case is implemented within each Drilling unit working under his responsibilities

1.3.3. Rig Operator's Drilling Gen. Mgr.

- Responsible to ensure that all requirements mentioned in this guidelines are carefully implemented through supporting the implementation of periodical audit and inspection plan
- Ensure all rig contractors and drilling team are adhering to all EGPC safety rules and regulations
- Ensure all rig contractors are Inspection plans are being complied with EGPC Equipment integrity and inspection matrix
- Ensure that HSE case is implemented within each Drilling unit working under his responsibilities
- Responsible for reviewing HSE case results and recommendations with HSE manager and Rig contractor Operations and HSE management team

1.3.4. Rig Operator's HSE Gen. Mgr.

- Responsible to ensure that all requirements mentioned in in this guidelines are carefully implemented Responsible to prepare a plan to Perform HSE audit/ Inspection/ Walkthrough ..etc. and Follow up the daily HSE activities using his Company checklist which established based on EGPC Drilling and workover guideline
- Responsible to ensure that the acceptance audit performed by EGPC approved third party is performed and all critical and major items are closed
- Responsible for Assigning Rig HSE team for continues follow up all rigs operations
- Responsible for reviewing HSE case results and recommendations with Drilling manager and Rig Contractor Operations and HSE management team

1.3.5. Rig Contractors' Operations Gen. Mgr.

- Operations Manager is responsible to approve the specific inspection requirements plan updated by the Maintenance and asset integrity departments at his company after ensuring its totally complied with EGPC requirements
- Responsible to ensure that the inspection Plan totally implemented through his respective Drilling and workover operations managers
- Responsible to issue Clear instructions and commitments to all company affiliated rigs to comply with EGPC HSE guidelines
- Ensure that HSE case is implemented within each Drilling unit working under his responsibilities

1.3.6. Rig Contractor's Drilling and workover operations managers

- Responsible to follow up the implementation of the inspection requirements which already approved by the Rig contractor's operations manager and to submit the same to his respective Drilling and workover Superintendents
- Ensure that HSE case is implemented within each Drilling unit working under his responsibilities

1.3.7. Rig Contractor's Drilling Superintendents

- Responsible to ensure that all equipment certifications (COCs, Inspection certificates etc.) of equipment owned by his company and under his supervision are uploaded into any drilling company secured Shared folder or PMS, CMMS or equivalent systems, as applicable, in order to be eligible for all company affiliated rigs
- Responsible to Ensure that All rigs under his responsibilities are complied with EGPC Drilling and workover HSE guidelines and international standard
- Ensure that HSE case is implemented within each Drilling unit working under his responsibilities

1.3.8. Rig Contractor's Maintenance and Assets Integrity Manager

- Responsible to provide necessary support and advice to all Maintenance Superintendent and maintenance teams (fields and workshops), as applicable, for implementing EGPC asset integrity and inspection requirements as defined in this manual,
- Responsible to issue an approved PMS and the inspection plan and procedure based on EGPC Drilling and workover HSE guidelines and international standard
- Responsible to Update the Current PMS and Inspection plan periodically based on EGPC Drilling and workover HSE guidelines and international standard

1.3.9. Rig Contractor's Rig Superintendent (Rig Supt)

- The rig Supt.is responsible for planning and execution of the inspections as per EGPC guidelines Equipment Inspection Matrix and OEM recommendations
- Rig Superintendent will be the custodian of the original inspection certificates and will be responsible to maintain those certificates in his office as defined in this Module
- Responsible to provide the required mandatory training for His affiliated rigs crews based on this guideline and international standard

- Responsible to assign rigs STP to supervise the inspections, in accordance with this Guideline

1.3.10. Rig Contractor's Maintenance Superintendent

- Responsible to provide necessary assistance to the Rig Superintendent in identifying rig specific inspection requirements and in updating the Inspection Matrix.
- Responsible to ensure that any unscheduled repairs carried out during the inspection process are recorded in their Maintenance system
- Responsible to ensure that PMS and inspection plan are totally implemented in a way that does not contradict with EGPC HSE Guidelines
- Where the Maintenance Superintendent position is not available, the above defined responsibilities will be borne by the Rig Superintendent.

1.3.11. Rig Contractor's Senior Tool pusher

- Responsible to supervise the inspections, in accordance with this Guideline after designated by his company to do so.
- Must be qualified and experienced to supervise the inspection activities in accordance with this Guideline
- Responsible to verify the completion of the individual inspection jobs.
- Responsible to maintain the copies of Inspection Certificates in dedicated files as defined in this Guideline
- Responsible to maintain the Equipment Integrity Inspection Tracker up to date as defined in this procedure.

1.3.12. Rig Contractor's Chief Mechanic and Chief Electrician

The Chief Mechanic and Chief Electrician will assist the inspection party on site by providing the necessary Manufacturer's Parts Lists, Operation Manuals, drawings and other technical support needed for the inspections.

1.3.13. Rig Contractor's site HSE

Responsible to follow up the implementation of the inspection requirements which already approved by the Rig Operator's operations manager and to Report all deficiencies to Rig Operator's HSE manager and Rig Superintendent through the official reporting channels

1.4. Procedure

1.4.1. Rig Equipment Integrity Inspection

The process of equipment integrity inspection is defined as comparison of equipment conformity and serviceability condition to predetermined standards as listed on the EGPC equipment Inspection Matrix followed by determination of group of actions required.

1.4.2. Rig Equipment Integrity Inspection Matrix

- To ensure that the integrity of all drilling and workover equipment are maintained correctly to render those as 'fit for purpose' at all times within their given design criteria, the inspection requirements are listed in 'EGPC rig equipment Integrity Inspection Matrix' (EGPCEIIM), provided as Appendix 1 attached to this Chapter
- EGPC rig equipment Integrity Inspection Matrix' (EGPCEIIM) Is considered a minimum requirement for rig Equipment inspection and all rig operators have to follow all requirements mentioned as minimum
- EGPC rig equipment Integrity Inspection Matrix contents are primarily based on the requirement of equipment manufacturer "OEM" and international applicable oilfield standards and practices.
- The Maintenance /Assets integrity Managers within all drilling and workover companies is the

custodian of their own equipment Inspection Matrix which must be prepared and issued in each drilling and workover company in Egypt based on the mandatory requirements mentioned in this guideline

- Drilling and workover company's operations Managers will be fully accountable for implementing their own Equipment Inspection Integrity Matrix based on this guideline requirement
- Any changes to the equipment inspection frequency/intervals or any other changes should be based on OEM official recommendations or International standard changes and must be mentioned in the Matrix revision control register" MRCR" at each drilling and workover company
- Under no circumstances the inspection /maintenance best practices should not exceeding the OEM requirements /Applicable relevant standards and should be scheduled and included in the PMS
- MOCs (Management of Change) or Dispensation requests related to the rig operator equipment inspection matrix will be issued based on New OEM recommendations, Standards changes or IADC recommendations and it must be reviewed by the Maintenance /Assets integrity Managers and shall be maintained in equipment register
- Compliance audits will be implemented through EGPC special inspection Committees

1.4.3. Scope of EGCP Equipment Inspection Matrix

- EGPC equipment inspection matrix guideline, provided in this chapter, defines EGPC minimum requirements as well as the inspection frequencies for API Category III and Category IV inspections and fields/full inspections of the main and critical equipment as well as applying other relevant international standards
- The related detailed requirements contained in the EGPC Equipment Integrity Inspection guideline define the scope of work for the required inspections for each equipment used in Drilling and workover operations.
- The inspection frequencies listed on the EGPC integrity Inspection Matrix guideline will be applied for all rig equipment based on the following inspection levels
- API 54, API 52, and other API standards related to HSE aspects within drilling and workover operations must be implemented carefully within all drilling and workover operations

1.4.4. Inspection Levels

Based on the Applicable international standards, OEM recommendations referred, IADC requirements and EGPC equipment integrity matrix guideline, EGPC Equipment Inspection Categories are divided as below:

The inspection levels For all equipment falling under the API RP -4G, API RP-8B, API RP 7L, 14F, and API 53 STD the following inspection categories shall be applied

1.4.4.1. Category I: (PM system Category)

This category involves observing the equipment during operation for indications of inadequate performance. Any equipment found to show cracks, excessive wear, etc. must be removed from service for further examination.

Note: Must be included in the PM System and all records must be maintained, NO third-party inspection certificates are required

1.4.4.2. Category II: (PM system Category)

In addition to CAT I inspection, further inspection for corrosion, deformation, loose or missing components, deterioration, proper lubrication, visible external cracks, and adjustment.

Note:
- Must be included in the PM System and all records must be maintained, NO third-party inspection certificates are required
- CAT I and CAT II inspections are integrated with scheduled preventive maintenance systems, therefore, the scope of this inspection chapter does not consider CAT I and CAT II inspections. BUT EGPC Drilling HSE auditors will check the implementation of PM system including CAT |I and CAT II within their audits Based on the rig operators Preventive applied maintenance plan

1.4.4.3. Category III: (inspection plan)

In addition to CAT-II inspection requirements, this category should include non-destructive testing (NDT) of exposed critical areas that may involve some disassembly to access specific components and identify wear that exceeds the manufacturer's allowable tolerances.

Note: The manufacturer's allowable tolerances must be identified with references and provided to the inspection third party this may include, NDT-MPI, NDT-UT, NDT-PT, NDT-VT, and other Nondestructive testing based on the inspection scope of work which must include EDPC as minimum requirements

1.4.4.4. Category IV:

In addition to Cat III inspection requirements, Category IV inspection requires further inspection for which the equipment is disassembled to the extent necessary to conduct NDT of all primary load-carrying components as defined by the manufacturer and the equipment must be:
- Disassembled in a suitably-equipped facility to the extent necessary to permit full inspection of all primary-load-carrying components and other components that are critical to the equipment.
- Inspected for excessive wear, cracks, flaws and deformations.
- Replacing spare parts and repair activities must be included in CAT IV report in details

Note:
- Suitably–equipped facility will include specific (rig operators) approved workshops/ yards where the necessary tools and equipment can be made available.
- Prior to Category III and Category IV inspections, all foreign material such as dirt, paint, grease, oil , scale etc. must be removed from the concerned parts by a suitable method (eg. paint-stripping, steam-cleaning, grit-blasting) this step must be included in the report with evidences .

For all drill pipes, BHA and drill string accessories falling under DS–1 Vol. 3 and API RP 7G-2 inspection standard the following inspection categories shall apply:

Category III:

Designed for mid-range drilling conditions where a standard inspection Program is justified. If a failure occurs, the risk of significant fishing or losing part of the hole is considered minimal.

Category IV:

This category may be used when drilling conditions are more difficult than category III. Significant fishing cost or losing part of the hole are in the event of a drill stem failure.

Category V:

This category applies to severe drilling condition. Several factors combine to make the cost of a possible failure very high.

With the same categories as Cat III and Cat IV requirements, EGPC has classified more equipment integrity inspections categories as for any equipment not covered under the API regulations "Field Inspection" and "Full Inspection".

1.5. Types of inspections

1.5.1. Equipment Field inspection: CAT III

The purpose of the field inspection is to carry out visual and NDT inspection of exposed critical areas and to identify any equipment survivability problems, field inspection Is equivalent to API Category III type and normally conducted on site with limited interruption of the operations

1.5.2. Equipment Full inspections, CAT IV

More extensive inspections than field inspections which may or may not require the equipment to be fully stripped down depending on the applicable standard and OEM regulations, may be done either on site or with the help of qualified inspectors and workshops.

1.6. Qualifications for Inspectors and Welders

1.6.1. Inspector Qualifications

The persons carrying out equipment integrity inspections will be suitably qualified, either by possession of a recognized degree, certificate or professional standing, and has sufficient knowledge, training and experience

1.6.2. Specific Category III qualifications

- Inspector conducting Category III inspection must possess ASNT Level I Technician certified per ASNT specification SNT-TC-1A or equivalent.
- The supervisor of the inspector must possess adequate knowledge and experience in this field. Typical persons qualified to supervise the inspection could be an engineer or ASNT Level II Technician certified per ASNT specification SNT-TC-1A, with the aid of a senior operations person (Senior mechanic, Senior electrician, and Senior tool pusher) designated by rig operator Representative, provided they meet the above stated criteria of experience, training and knowledge.

1.6.3. Specific Category IV qualifications

- Category IV inspection of the drilling structures will be conducted by or closely supervised by a Professional Engineering third parties, Original Equipment Manufacturer (OEM) representative or authorized representative of other manufacturer of drilling structures
- Welds visual inspection shall be conducted by AWS certified welding inspector or equivalent.
- Category IV inspection qualifications of the other equipment covered in this standard shall have the same CAT III requirements.
- Rig operator's management must assign rig inspection responsibilities to their Rig superintendents, and maintenance superintendents in order to be involved in the supervision of the implemented inspection at rigs sites under their supervision.

1.7. General Lifting gear and lifting equipment inspectors

All inspectors and supervisors shall be certified by internationally recognized lifting equipment and lifting gear inspection organization must have sufficient experience in this regards (not less than two years' experience).

Each rig shall prepare an updated lifting gear register" SOW" and shall be provided to the inspection third party as part of work order

1.8. Load testing and inspection

All inspectors and supervisors shall be certified by internationally recognized lifting equipment and lifting gear inspection organization.

NDT inspection must be conducted before and after Load testing to ensure safe testing and safe operations of tools or equipment

1.9. Information shall be provided to the inspection third party by the rig operators

The inspector shall recive the following information:

- OEM or related international standards assembly drawings and drawing identifying critical areas of equipment to be inspected;
- OEM or related international standards acceptance and Rejection criteria.
- History of repairs, modifications, grindings or remanufacturer, conducted at each equipment if available.
- The above data shall be officially provided by the rig Contractor's management to the rig operators PIC and inspection company in order to be used by the third party inspector

Note: In case of absence of the critical area drawings, all areas of primary-load-carrying components will be considered critical.

1.10. Welder Qualifications

Welders will be qualified to a recognized standards and to the level required for the application (as per ASME IX or equivalent). "Welder certificates is an essential part in the welding acceptance

1.11. Planning and Execution of Equipment Integrity Inspections

Based on rig operator equipment inspection and integrity matrix, each Rig Management shall monitor the 'Upcoming inspection' in their rig inspection plan for obtaining information on the forthcoming inspections and will communicate with maintenance /asset integrity managers for initiating necessary actions to carry out the planned inspections on time.

The rig management will ensure that all remedial works required as per the inspections are accordingly recorded under PM system and inspection plan as Unscheduled Repairs

In case of the inability to carry out the equipment inspection at the specified time, due to operations circumstances or force majeure such as epidemics or other force majeure, Rig management must conduct visual inspection for all critical equipment by an approved third party in order to extend re-plan the inspection with maximum 30 Days from the original inspection date using the deviation Permit after conducting specific risk assessment and get all the required approvals

1.12. Equipment Inspection Matrix Guidance

Description	Frequency Field Inspection (Cat III)	Frequency Field Inspection (Cat IV)	Relevant Standards
Mast, Substructure & associated Pad eyes	2 Years	10 Years"3650"	API RP 4G
Raising Cylinders (Mast & Sub)	1 Year	5 Years	API RP 4G
Stabbing Board & Monkey Board	6 Month	5 Years	API RP 4G
Crown Block	6 Month	5 Years	API RP8B,
Traveling Block	6 Month	5 Years	API RP8B
Drilling Hook and / Hook block combination	6 Month	5 Years	API RP8B
Top Drive System	6 Month	5 Years	API RP8B
Elevator Links	6 Month	Annually	API RP8B
DP & DC Elevators, Casing & Single Joint Elevators, Tubing Elevators	6 months	Annually	API RP8B
Kelly Drive Bushing	6 Month	2 Years	API RP 7L
Master Bushing	6 Month	5 Years	API RP 7L
Insert Bowls	6 months	Annually	API RP 7L
DP , DC , Casing Slips & Power Slips	-	6 months	API RP 7L
Spider / Elevator	6 months	1 Year	API RP 8B
Safety Clamp	6 Month	Annually	API RP 8B
Manual Rotary Tongs for DP , DC & Casing	6 Month	Annually	API RP 7L
Kelly Spinner	6 months	5 Years	API RP 8B
Draw-works Brake bands & Linkages	6 months	5 Years	OEM Recommendations.
Draw-works Disk Brake	6 months	5 Years	OEM Recommendations.
Deadline Anchor	6 months	5 Years	API RP 8B
Lifting Plugs & Subs	-	6 Month	API RP-7G-2
Tubular Lifting Cap	-	6 months	API RP-7G-2
Utility Winches (Including Truck Winches,Subbase Raising)	6 months	1 Year	ASME B 30.7
Man Riding Winch	6 months	1 Year	ASME B 30.23, B 30.7
Rotary Swivels	6 Month	5 Years	API RP8B
Drilling Spools, Flanges, Diverters & Valves	-	5 Years	API STD 53
Hub Clamps	6 Month	5 Years	API STD 53

Description	Frequency Field Inspection (Cat III)	Frequency Field Inspection (Cat IV)	Relevant Standards
RAM Type BOP	2 Years, others	5 Years	API STD 53
Bag Type BOP Annular	Annually	5 Years	API STD 53
Choke & Kill Line (Cement Line)	New well	5 Years	API STD 53
IBOP , Kelly Valve and Safety Valve	6 Month	5 Years	API STD 53
Mud Gas Separator	Annually	5 Years	API STD 53
Hydraulic Catwalk	1 Years	3 Years	OEM Recommendations.
Iron Roughneck		Roughneck	OEM Recommendation
Pipe Arms & Pipe Loaders	1 Year	3 Years	OEM Recommendation
Spinning Wrench	-	6 Month	OEM Recommendation
Chicksans & Swivel	-	1 Year	API 570, ANSI B 31.1
High Pressure Choke Manifold and Valves	1 year	5 Years	API STD 53
Standpipe & High Pressure Piping	1 Years	5 Years	API 570
Rotary hoses, Vibrator hoses & Welded Connections	-	1 Year	API RP 7L , API STD 53
Pulsation Dampener	1 Year	10 Years	OEM Recommendation
BOP Accumulator Unit	6 month /Annual	5 Years	API STD 53, OEM Manual
Accumulator Bottles	1 year	5 Years	API STD 53,
Accumulator Bottles WT	1 year	-	API STD 53,
Mud Pump Relief Valves calibration	-	12 Months	API RP 576
Drill Pipe	-	50K Ft. or 6 Months	API RP-7G-2, DS 1 (3)
Drill String Accessories & BHA	-	500 Rotating Hours	API RP-7G-2, DS 1 (3)
Raising Line / Bridle Line/Substructure raising line	-	10 Cycles or 2 Years (whichever occurs earlier)	API RP 4G
Slings, Shackles & Fabricated Pad Eyes	-	6 Month	API RP 9B, ASME B 30.9, ISO 2415

Description	Frequency Field Inspection (Cat III)	Frequency Field Inspection (Cat IV)	Relevant Standards
Trailer King Pins	-	6 Month	SAE J 2228
Personnel Basket	6 Months	4 Years	BS EN 14502-1:2005
Personnel Elevators	6 Months	4 Years	BS 5655-10.2.1
Self-Propelled Man lifts	6 Months	4 Years	ISO 18893
Sack Handling Devices	-	6 Months	ASME B 30.11 & BS 2853
Crane Hooks	-	1 Year	ASME B30.10
Forklift Forks & Forklift Fork Support	-	1 Year	BS ISO 5057:1993
Air Pressure Vessel	1 Year	5 Years	API 510,API RP 572
Air Pressure Relief Valves	1 Year	5 Years	API 510, API RP 576
Fuel Storage Tanks	1 Year	10 Years	API STD 653
BOP Lifting Devices	1 Years	4 Years	API 7 L
Fall Arrestor & Emergency Escape Devices	6 Month	1 Years	ANSI/ASSE Z359.14-2012
Ex(d) & Ex€ Systems	1 Year	3 Years	IEC 60079-17
Rig Instrumentation	6 Month	1 Year	OEM Recommendations.
Breathing Air Cylinders (Fiberglass Wrap/steel)	1 Year	3 Years	ASME VIII
Rig Main Diesel Engines	Top End Overhaul	Major Overhaul	OEM Recommendations.

D2. Inspection Cerificates Process And Filling

EGPC

2.1. Scope

This standard is applicable to all EGPC/EGAS affiliated rigs within Arab republic of Egypt

2.2. Purpose

To provide necessary guidance for rig operators management and E&P companies for rig equipment certifications process and Re-Certification requirements

2.3. Responsibility

It is the responsibility of rig operator's management and work site supervisors to ensure that this standard is followed.

2.4. Requirements

2.4.1. Equipment Integrity Inspection Tracker

In order to have an overview of the status of the equipment inspections based on the Rig specific equipment inspection matrix, an Inspection Tracker will be maintained by rig management on specific form established for equipment Integrity Inspection Tracker

2.4.2. Inspection Certification management and control

- The Inspection Summary / Certificate contents and minimum information required must be mentioned in all agreements or contracts between rig operators and inspection third parties, as a minimum:
- On receipt of the inspection certificates from the inspection company, those will be verified against the contents by rig operator representative before acknowledging on the certificate.
- Each Rig contractor has to assign a qualified person to accompany the inspectors as a witness and to ensure the inspection quality and accuracy
- The filing of the inspection certificates will be carried out in sequential manner in accordance with the Certificate Filing Reference in this guideline
- The filling List provided as Attachment 2 to this chapter and should be recorded in PM system or equivalent under Equipment inspection part
- The certificates will be filed using the EGPC Equipment Certifications register guidance
- Each Rig Superintendent will be the custodian of the original inspection certificates and will be responsible for maintaining the OEM certifications and equipment integrity inspection certificates in the sequence of the Certificates Filing Reference List provided in this chapter
- Each Rig Management will be responsible to maintain copies of the OEM certificates and copies of inspection certificates in the sequence of the Certificates Filing Reference List provided in this chapter
- Inspection plan to be established at allover rig contractors based on EGPC Guidance

2.5. Guidance on Maintaining Equipment Certifications at rig site

Rig Contractor's management shall responsible on maintaining the equipment COCs in addition to the re-certification documentations in a good manner based on the as following subjects:

- Certificate types
- Inspection certificate contents
- Filing of certificates
- Inspection Date
- Next inspection date
- Certificates history

Guidance on Maintaining Equipment Certifications has been prepared for easy understanding of the equipment certification filing requirement by rig operator's management.

Guidance on Maintaining Equipment Certifications is a mandatory part that shall be followed by rig contractors' management

2.6. Certificate types

The certification process and control requirement of all rigs equipment can be categorized into two main types:

2.6.1. Equipment Original Certification

- Certificate of conformity (COC), provided by OEM, to relevant international standards of current edition, eg. API, ASME ,IEC etc.
- Proof load test certificate, for load-bearing equipment, as applicable
- Pressure Test certificate, for high-pressure hoses
- Hydrostatic test certificate, for pressure vessel, as applicable
- Capacity test certificate, for pressure-relieving devices, as applicable

2.6.2. Equipment Re-Certification:

Supported with various applicable NDT reports, load test report, hydrostatic test report, capacity test report etc. provided by competent inspection company/party, after carrying out API CAT III or Cat IV inspections in accordance with rig operator's equipment Inspection Matrix requirements and based on this guidance requirements, including associated tests, or after undergoing any major repairs, or modifications reports and its approvals as applicable.

2.6.3. Technical documentation

Filling List guidance "the below list is considered guideline of minimum requirements "

Title	Remarks
Main Technical Registers	
Mast and substructure System	
Hoisting System	
Rig Floor System	
Rotating System	
Mud Pump Assembly	
Mud circulating /cleaning system	
Standpipe System	
High Pressure Hose	
Bumper Hose	
High Pressure Piping	
Well Control System	
BOP Equipment	
Choke and Kill Lines and Valves	
Choke Manifold	
Power Generation System	
Tubular Handling System	

Title	Remarks
Drill String System	
Hydraulic System	
Air Dryers	
Bulk Storage & Handling System	
Bulk Material Handling	
Big Bag Handling System	
Fuel System	
Water System	
HSE Equipment	
Lifting Gear	
Gas Detection and Alarm System	
Air Breathing system	
Waste Management equipment	
Mobile Heavy Equipment	
Main Camp System	
HSE equipment	
Additional Technical Registers	
Wall thickness register	
Calibration register	
Lifting register	
HSE and Rescue equipment register	

2.6.4. Equipment Integrity Inspection Certificate Contents

As per EGPC guideline requirements, the inspection certificate will contain the following information, as a minimum:

- Rig Name and No.
- Location of inspection
- Equipment Description – Name, Make, Serial No.
- Date of Inspection.
- Type of inspection carried out with relevant international standard reference.
- Photograph/single line sketch of equipment inspected showing the area inspected.
- Devices /Tools used for inspection and their calibration validity.
- Result of Inspection with remarks.(accepted/ rejected)
- Repair work carried out, if applicable.
- Result of inspection with rework done.
- Inspector and Inspection Company Details.
- Signature, Job Position of both inspection company representative and rig operator representative.

Note: The inspection certificates provided by EGPC approved inspection companies MUST be verified for all details and then acknowledged by signing by rig operator authorized person on dedicated place provided on the certificate.

2.7. Filing of Certificates

Filing of equipment certificates will be done by creating two Key sets of files on each EGPC affiliated rig:

2.7.1. Original set "First set of file" Must contain

- Rig Equipment List as first page
- Original equipment Certificate of Conformity (COC), where applicable
- Original Hydrostatic Test Certificate, where applicable
- Original Load Test Certificate, where applicable
- Original Capacity Test Certificate, where applicable

2.7.2. Re-certification set "Second set" must contain the re-certifications and other testing reports

- Rig Equipment List as first page
- Rig Equipment Inspection Matrix with all relevant information updated
- Rig Equipment Inspection Tracking Sheet with all relevant information updated
- Equipment re-certification inspection certificates and various applicable NDT reports, repair reports, modifications report and its approvals if applicable, and other test reports accompanied by the specific cover page for Equipment Inspection Certification including the following:
  - Equipment Name
  - Inspection type
  - Inspection standard reference
  - Equipment serial
  - Assets number
  - Filling reference
  - Inspection Company
  - Date of inspection
  - Date of next inspection
  - Type of next inspection

Note: The sequence of filing the equipment certificates will follow the Equipment Inspection Certificate Filing Reference List.

D3. Technical Documentation Review

EGPC

3.1. Scope

This standard is applicable to all EGPC/EGAS affiliated rigs within Arab republic of Egypt

3.2. Purpose

To ensure that all proper technical documentations are in place during the equipment re-certification and rig acceptance process as a guide for most important items to be checked in the technical documentation of the major equipment.

3.3. Certificates of conformity contents

Certificates of conformity is a declaration from a non-consumable item supplier stating that the referenced Product /material meets all requirements, standards and/or specifications, but it is not a summary of test results. Could be named Certificate of conformity/Certificate of compliance/ Certificate of manufacturing/ Certificate of quality

3.4. Essential information for the Certificates of conformity

- Certification should be on company letterhead
- Date of issuance
- Manufacturer Name
- Manufacturing Facility
- Product description
- Part/Serial Number
- Applicable Specification/Standards to which the Product was manufactured
- Approval signature/Stamp (from quality assurance department)

3.5. Mast and Substructure re-certification (API RP 4G)

- Records of the CAT III and CAT IV inspections including the visual inspection forms mentioned in the API RP 4G latest version and other applicable standard.
- Description of the structure including the name of the manufacturer, date of manufacturer, style, serial number, PSL and specifications, clear height, maximum static hook load chart.
- Complete results and methods of any NDT inspection reports.
- Date and documentation of all repairs performed.
- Significant defects reported.
- Location and extent of repair/ modifications attached with Copy of any approved WPS “welding procedures specifications”, MOC, RA .etc.
- Primary load carrying components repaired or modified
- Copy of all NDT inspector’s qualifications
- Copy of welder’s qualifications.
- Material certifications and traceability as applicable.
- Assembly drawings.
- New COC for the structure.

3.6. Hoisting Equipment re-certification (API RP 8B)

- Records of the CAT III and CAT IV inspections including the visual inspection,
- Load test related to the re-certification or for indicating the load carrying capacity of the equipment “load test may be performed at the rig site”.
- All repairs and remanufacturing activities performed with its approvals.
- Significant defects report.
- Location and extent of repair attached with Copy of any approved WPS “welding procedures specifications”
- Complete results and methods of any NDT inspection reports.
- Primary load carrying components repaired or modified.

- Replacement parts.
- Material certifications and traceability as applicable.
- Copy of all NDT inspector's qualifications.
- Copy of welder's qualifications.
- Re-certification COC for the equipment

3.7. Equipment covered under the API RP 8B

- Crown-block sheaves and bearings;
- Traveling blocks and hook blocks;
- Block-to-hook adapters;
- Connectors and link adapters;
- Drilling hooks;
- Tubing hooks and sucker-rod hooks;
- Elevator links;
- Casing elevators, tubing elevators, drill-pipe elevators, and drill-collar elevators;
- Sucker-rod elevators;
- Rotary swivel-bail adapters;
- Rotary swivels;
- Power swivels;
- Power subs;
- Spiders, if capable of being used as elevators;
- Dead-line tie-clown/wireline anchors,
- Drill-string motion compensators;
- Kelly spinners, if capable of being used as hoisting equipment;
- Riser-running tool components, if capable of being used as hoisting equipment;
- Wellhead-running tool components, if capable of being used as hoisting equipment;
- Safety clamps, capable of being used as hoisting equipment;
- Top drives;
- Casing running tools.

3.8. Drilling Equipment re-certification (API RP 7L)

- Records of the CAT III and CAT IV inspections including the visual inspection, 7.2.load test/ pressure test related to the re-certification or for indicating the load 7.3.Carrying capacity of the equipment.
- All repairs and remanufacturing activities" if any" performed shall be Supported with all related official documents and approvals.
- Significant defects report.
- in case that any major repairs or modifications were performed ,the location and extent of repair attached with Copy of any approved WPS "welding procedures specifications", MOC, OEM approvals, RA ,,etc,,,.
- Complete results and methods of any NDT inspection reports. 7.8.Primary load carrying components repaired or modified.
- Replacement parts.
- Material certifications and traceability as applicable.
- Copy of all NDT inspector's qualifications.
- Copy of welder's qualifications.
- Re-certification COC for the equipment

3.9. Equipment covered under the API RP 7L

- Rotary tables.
- Rotary bushings.
- Rotary slips.

- Rotary hoses.
- Slush pump components.
- Spiders not capable of use as elevators. 8.7.Manual tongs.
- 8.8.Safety clamps not used as a hoisting device.Ram preventer and annular re-certification (API RP 53-API 6A and API 16A)
- Valid Manufacturer API-16A license
- Valid Quality control certificate (ISO).
- Certificate of compliance.
- Equipment identity information (Material and temperature class; size and working pressure, OEM, PSL, serial number and any other traceable info).
- BOP element's H2S trim proof.
- BOP body or shell's mechanical properties.
- List of replacement parts.
- Replacement parts material certificates and chemical analysis
- Visual examination.
- Surface NDT inspection (MPI or PT).
- Repair welds welding procedure specifications
- Repair welds heat treatment.
- Repair welds subsurface NDT (radiographic or ultrasonic tests).
- Hardness testing report

3.10. The BOP acceptance inspection includes but not limited to the following BOP tests

- Hydrostatic Proof Test (Hydrostatic body or shell test).
- Hydraulic Operating System Test.
- Sealing Characteristics Test (Closed-preventer test).
- Manual ram-locking system test. Ram preventers only
- Hydraulic ram-locking system test (if applicable). Ram preventers only
- BOP lifting lug load test.

3.11. General requirements

3.11.1. Visible Marking of Damage:

It is recommended that at the time of the inspection all damaged sections are marked clearly and visibly so that needed repairs can be identified. When repairs are made, the visible markings should be removed by painting. It is also necessary for the inspector to write "None" when no damage marks are needed, as this is his indication that the item has passed inspection.

3.11.2. Defects:

- Any defects found must be reported to the Rig Management for the correct remedial actions.
- Mark any crack, damage or "out of tolerances wear" visible on the items.

3.11.3. Through cleaning:

Ensure that all equipment is thoroughly cleaned prior to commencing any inspection and all foreign material such as dirt, paint, grease, oil, scale, etc. are actually removed from the concerned parts by a suitable method (e.g. paint-stripping, steam-cleaning, grit-blasting).

D4. Rig Equipment Inspection

EGPC

4.1. Scope

This standard is applicable to all EGPC/Egas affiliated rigs within Arab republic of Egypt

4.2. Purpose

This procedure was developed as a guideline for the inspection and should be used by the qualified inspector responsible for both the "Field Inspection" and "Full Inspection", The following activities should be seen as the "minimum requirement "In the manufacturer's documentation and manuals you may find more detailed recommendations especially for the most critical and safety related items of the mast and substructure.

4.3. Responsibility

- It is the responsibility of rig operator's management and work site supervisors to ensure that the following requirements are followed.
- The STP will be responsible to ensure that Rig Critical Instrumentation "Inventory" Log is maintained up to date " Log updates must be Planned "

4.4. Definitions

4.4.1. Primary Load

Axial Load to which the equipment is subjected in operation

4.4.2. Critical Area

Highly stressed area of a primary load carrying component as defined by the manufacturer

4.4.3. Primary Load Carrying Component

Component of the equipment through which the primary load is carried

4.4.4. Visual inspection

A visual inspection is an inspection which identifies, without the use of access equipment or tools, those defects, e.g. Missing bolts, which are apparent to the eye.

4.4.5. Close inspection

A close inspection is an inspection that encompasses those aspects covered by a visual inspection and, in addition, identifies those defects, e.g. Loose bolts, which will become apparent only when access equipment,

E.g. Steps (where necessary) and tools are used.

Close inspections do not normally require the enclosure to be opened or the equipment to be de-energized.

4.4.6. Detailed Inspection

A detailed inspection is an inspection which encompasses those aspects covered by a close inspection and, in addition, identifies those defects, e.g. loose terminations, which only become apparent when the enclosure is opened up, or by the use of tools and test equipment.

4.4.7. Compex

(Meaning Competency in Ex atmospheres) is a global certification scheme for electrical and mechanical crafts persons and designers working in potentially explosive atmospheres.

The scheme is accredited by UKAS to ISO/IEC 17024. The scheme is broken down to twelve units covering different actions and hazardous area concepts

4.4.8. Top End Overhaul

Minor disassembly for the engines components including the removal, inspection and rework of the engines cylinder heads and replacement/service of some additional accessories and engine components as per the OEM instructions.

4.4.9. Major/" Zero Hours" Overhaul

Major disassembly for the engines including the removal, inspection, exchange and rework of all the engines components as per the OEM instructions. Including pistons, liners, bearings, camshaft(s), gear train, flywheel and crankshaft.

4.4.10. Suitably Qualified Person

A person who is by knowledge, experience or training has successfully demonstrated the ability to manage Top End and Major Overhauls of the rig main diesel engines

4.5. Inspection Requirements

4.5.1. Mast and substructure

4.5.1.1. CAT III Field Inspection (Every 2 years)

- A thorough visual inspection of all load bearing members, welds and pickup points must be conducted to Determine the condition of the mast and substructure.
- Inspection will be conducted via an approved third party with Qualified Inspector
- Thorough visual inspection of all load bearing members, OEM welds and pickup points, also identify corrosion points if any
- NDT-MPI & VT must be conducted to the following parts
  - Main section pad eyes and OEM welds
  - All Pad eyes distributed all over the mast and substructure
  - Mast raising / lowering pad eyes
  - All center pins
  - Raising system including raising line, sheaves and center pins
  - Yoke and its pad eyes including two center pins
- NDT – MPI and VT for hang off line, shackle, pad eyes, check original certificates for SWL
- Rig floor stairway pad eyes, pins and bolts
- All repairs to major damage require supervision of a Professional Engineer or an OEM agent.
- Repairs to minor Damage may be completed by operating personnel, after consulting with the rig operator Field Support Manager, and do not Require certification. If there is any question as to whether the damage is major or minor, a Professional Engineer or OEM agent shall be consulted.
- Check the condition and content of the manufacturer's name plate.

Below is the guide of thorough visual inspections needed to be carried out on the mast and substructure (according to API 4G).

- Mast Legs DS, ODS, Rear Leg DS: Symmetry, Visible damage, Pin condition, Pin hole condition, Safety pins/keepers
- Crown Support Beams: Pins & bolts, Safety pins/keepers, Welds
- Crown Saver Block(s): Safety cable, Block(s) condition, Attachment strapping, Strapping welds
- Ladders: Vertical rails straight Rails in alignment, Ladder stand offs, Standoff connections Rail welds, Rungs Rung welds, Rung spacing, Access at rig floor, Cage, Toe clearance
- Raising, Telescoping and Guying Assemblies
  - Hydraulic System: Raising ram condition Hose and hose ends, Connections

  - Guy Line Anchorage: Anchors and dead man Acceptable, Turnbuckles, Cable clamps, Guy line condition
  - Locking Devices and Seats – Telescoping Masts: Pin hole(s), Pins, Safety pins/keepers, Bars/ dogs or pawls, Seats, Mechanism
- Tong Counterweights: Guides, Weight device, Sheaves/shafts, Wire lines, Cable clamps, Welds
- Miscellaneous Sheaves Assemblies: Clevis/shackle, Mast pad-eye, Sheaves, Bearings, Shafts, Sheave bolt, Side plate bolts, Bolt safety pins, Grease fittings, Safety line
- Shoes: Pin connections, Pin holes, Bolt connections, Bolt holes, Pins/bolts, Safety pins, Support beams Welds
- Floor Area: Floor plates, Handrails & toe boards, Handrail connections, Setback material, Floor bracing ,Welds
- Sub-Spreaders and Rotary Beams: Rotary beams, Spreaders, Pin connections, Pin holes, Pins, Pad-eyes, Welds
- Dead Line Anchor Mounting: Supports, Bolts, Flooring, Break over assembly, Handrails Acceptable, Welds Substructure Components, Beams straight, Cross braces, Pin/bolt holes, Pin/bolts, Safety pins, pull back posts, Draw works tie downs, Welds, BOP anchor pad-eyes, Pad-eyes
- Raising System: Pin connections, Pin holes, Pins, Wire lines, Sheaves, Bearings, Seals, Grease fittings, Hydraulic winches, Hydraulic cylinders, Hydraulic hoses, Cylinder hinge

4.5.1.2. Cat IV Full Inspection (every 10 years)

The entire mast must be inspected by a Professional Engineer or an Original Equipment Manufacturer (OEM) or his agent. This inspection shall include but not limited to the following:

- Category III inspection in addition to the following:
- The equipment is to be disassembled and cleaned to the extent necessary to conduct NDT of all defined critical areas.
- An ultrasonic thickness test is recommended on all tubular style (or closed style) members to test for internal corrosion.
- All welds (100 %) shall be visually examined.
- All welds in critical areas shall be inspected using magnetic particle (MPI), liquid penetrant (PT) or ultrasonic testing (UT) in accordance with AWS D1.1. Welds on galvanized structures may require different inspection techniques and intervals. Cracks are generally identified through visual inspection on a galvanized mast/derrick.
- Disassemble mast and substructure members
- Sand blasting must be performed for all mast and substructure members
- Perform NDT MPI for main section pad eyes and supporting eyes
- Perform NDT MPI or all must and substructure main pins 4.1.4.2.10. Disconnect raising sheaves and complete NDT –MPI 4.1.4.2.11. Measure the bearing clearance and sheave grove
- 4.1.4.2.12. NDT MPI for raising Sheaves foundation base and raising pad eyes 4.1.4.2.13. Perform NDT MPI for raising Yoke and its pad eyes including two Main pins 4.1.4.2.14. NDT MPI for raising sockets and check the raising line previous records 4.1.4.2.15. NDT VT/MPI for mast cage structure, connection eyes and
- NDTMPI for Rig tong counter balance track
- Check the all weep holes in good conditions and not blocked
- Review OEM inspection certificates

4.5.1.3. Inspection results

Any damage found during the inspection is defined as major, secondary, or minor, on theFollowing basis.

- Major Damage: Significant geometrical distortion or structural damage to primary load carrying components including raising assembly, main legs, hinge points and crown.
- Secondary Damage: Damage or distortion to non-primary load carrying components.
- Minor Damage: Damage or distortion to ancillary equipment, i.e. Ladders, monkey board, walk

around, tong hangers, etc

All damage may be repaired in the field Major damage should be repaired in a shop-like environment and in accordance with the OEM or equivalent specifications.

Documentations and Records of the Inspection Results

Cat III & IV Certifications should include but not limited to the following:

- Type and style, serial number, PSL "product specification level"
- Name of manufacturer and date of manufacture,
- Clear height;
- Maximum rated static hook load, in pounds, with guy lines if applicable, for stated number of lines to traveling block,
- Maximum combined rated static rotary and rated setback capacity on substructure,
- List of components and assembly drawings; critical areas should be clearly defined.
- Complete documented results for the full inspection.
- Date and period of certification.
- Date of next Recertification

Repairs or Modifications should be reported as below

- Complete documented results of any inspection reports,
- Date and documentation of all repairs performed accolated with "Approved WPS, MOC, etc. " as applicable
- Significant defects (type, dimensions) reported,
- Location and extent of repairs,
- NDT methods used and results,
- Primary load carrying components replaced or modified,
- Date and location of repairs,
- Copy of NDT inspection's qualifications,
- Copy of NDT inspectors and welder's qualifications,
- Material certifications and traceability as applicable,
- Assembly drawings and documentation of all modifications,
- The date and the name of the qualified person(s) involved in the repair or modification.

4.5.2. Stabbing board and monkey board

4.5.2.1. CAT III Field Inspection – (Six month)

- Visual inspection and checking the main frame for bends, cracks, and deformations.
- Visual inspection and checking for all connections/mounting brackets and chains.
- Visual inspection and checking of the hoist (condition and wear).
- Visual inspection and checking the platform (inclination. Grating and handrails).
- Visually check the welding of the monkey board fingers and the safety chain wear, cracks or deformation.
- Visually check the stabbing board anti-fall mechanism and positive stopper installed underneath the track for any crack or deformation.
- Perform MPI on the connections and critical areas of the main frame." Critical areas must be identified in the rig inspection plan "by rig operator's management at each rig
- Check the condition and content of the manufacturer's name plate.
- Thorough visual inspection for whole structure,
- NDT-MPI for hanging connections
- NDT –VT for the shock absorber,
- NDT-MPI for main OEM welds
- NDT-MPI for the stopper and platform welding points
- Identify the SWL
- NDT –VT for Fall protection system

4.5.2.2. CAT IV Full Inspection – (Five years):

Complete the full Cat III every Six-month inspection in addition to the following:

- Sand blast the complete stabbing board/monkey board.
- Perform NDT-MPI on all identified load bearing and critical areas/components of the stabbing board/monkey board as per the manufacturer's specification.
- Complete overhaul (including load test) of the hoist.
- Repaint the stabbing board/monkey board.
- Complete disassemble the racking board
- Perform sand blasting for all main structure member
- Perform NDT- VT and MPI for finger OEM welding connections and check for bents or corrosion or cracks
- NDT- VT /MPI for the whole fingers from all sides
- NDT –VT for fingers safety chains
- NDT MPI for safety chain foundation welding areas
- NDT-MPI for all racking board Pad eyes
- NDT-MPI for mast supporting pad eyes
- NDT-MPI for the whole structure of mast supporting beam
- Complete NDT MPI and VT for the Air winch including foundation plates brake system and wire condition, complete NDT-MPI for drum
- NDT- VT for all fall arrestors devices
- NDT- MPI for all fall arrestor devices hanging points shackles, beams, links etc.
- NDT –MP/VT Escape devise and escape wire

Below is the guide of thorough visual inspections needed to be carried out on the monkey board and stabbing board (according to API 4G and OEM).

Pipe Racking Platform

Frame Straight, Pin Hole(s) , Pins , Safety Pins/Keepers , Frame Welds, Working Platform, Landing Platform ,Handrails ,Ladder Access, Fingers Straight ,Finger Welds, Finger Safety Lin

Casing Stabbing Board

Frame Straight, Welds, Handrails, Working Platform, Hoisting Assembly, Hoist Mounting,Lower Travel Stops, Pin or Bolt Holes, Pins or Bolts, Safety Pins/Keepers

Tubing Support/Belly Board

Frame Straight, Welds, Handrails, Pin Holes, Pins , Safety Pins/Keepers , Support Cables ,Cable Connections

Casing Stabbing Board Safety Equipment

Limit switch, Stoppers, Automatic brakes, guardrails system, personnel securing system, Safe working limit, load test report

4.5.3. Crown block

Ensure that all equipment is thoroughly cleaned prior to commencing any inspection and all foreign material such as dirt, paint, grease, oil, scale, etc. Are actually removed from the concerned parts by a suitable method (e.g. Paint-stripping, steam-cleaning, grit-blasting).

This inspection should be done while the drilling line is removed from the Draw works and the crown sheaves are not subjected to any load.

4.5.3.1. Field Inspection – Cat III (six months)

- Visually check for damage, bent beams.
- Visually check the condition of the paint of the crown frame (including handrails).
- Check the access and safety aspects of the crown platform.

- Visually check for wear and damage of the “bumper block” and its safety wires and wire mesh condition.
- Check the bolts and nuts and connections of the clusters (hammer check).
- Perform NDT-MPI & VT to Check the sheaves for wear, cracks including the fast line sheave and main OEM welding areas
- Visually check the wear or tolerances of the bearings (fast line sheave and cluster bearing) with a pry bar and check for equal spacing between sheaves.
- Perform MPI on weld areas of the cluster beams; hang off pad eye and jumper bars.
- Verify the sheaves groove depth and compare it with the maximum wear limits identified in OEM recommendations.
- Check the free access and condition of the grease nipples
- Visual inspection for wear & damage of the bumper block
- Preform Check the bolts and nuts and connections of the clusters
- Perform Check the Condition of the grease nipples and safety aspects of the crown
- Perform NDT MPI and VT for crown supporting frame up and down OEM welds and loose fastener
- Perform NDT MPI for All pad eyes up and down supporting frame
- Perform NDT-VT for the Fall arrestor devices and its hanging accessories and supports

4.5.3.2. Full Inspection – Cat IV (every five years)

Complete the full CAT III every six months’ inspection in addition to the following:

- Disassemble the crown block and ensure that all individual items, sheaves, bearings, seals etc. Are cleaned (Mark or document the position of each of the components).
- Perform all required NDT inspections on the frame, sheaves and shafts according to ASME codes and API Standard.
- Measure and document the wear of the sheaves (including the remaining wall thickness of the sheave rim) and reference the value to OEM recommendations.
- Visual inspection for all snatch block and decide the condition of its bearing
- Visual check the snatch block safety wire
- Replace all bearings and seals.
- Reassemble the crown block and use the sheave with the largest remaining wall thickness (shoulder thickness) as fast line sheave if applicable.
- Check the condition and content of the Serial Number plate.

4.5.3.3. General Notes

- A properly machined sheave groove allows a wire rope to pass through unhindered by friction or obstructions.
- Sheaves should be checked periodically for wear in the grooves which may cause abrasion, pinching, and bird- caging of the rope.
- If the groove shows signs of rope imprints the sheave must be replaced or re-machined and re-hardened in accordance with OEM procedures and tolerances and Under OEM approval ONLY.

- Below is the guide of thorough visual inspections needed to be carried out on the monkey board and stabbing board (according to API 8B and various OEM recommendations).
  - General information (OEM and Name plate): Make / Model, sheaves Number, Cluster Sheave Diameter, Fast Line Sheave Diameter
  - Serviceability Condition: Sheaves , Grooves in Gage , Spacers or Seals , Grease Fittings , Bearings , Drilling Line Guards “ Jumper bar)
  - Crown Platform: Decking Holes Covered, Safety Gate, Ladder Access, Handrails, Frame Straight Welds condition Bolts and Nuts.
  - Super Support Beams: Beam Straight, Pins and Bolts , Safety Pins/Keepers , Welds condition
  - Pad-eyes Under the Crown Platform: SWL Marked, Welds condition, Pin Holes.
  - Arrest/Climbing Assist Device Mounting: Support Gin-pole, Base, Sheave Attachment, Weight

Bucket Attach Welds condition, Pad Eyes.
- Crown Saver Block(s): Safety Mesh, Safety Cable, Block(s) Condition , Attachment Strapping, Strapping Welds
- DROPS prevention: Upper supported beam, Under supported beam,

4.5.4. Traveling block

Ensure that all equipment is thoroughly cleaned prior to commencing any inspection and all foreign material such as dirt, paint, grease, oil, scale, etc. Are actually removed from the concerned parts by a suitable method (e.g. Paint-stripping, steam-cleaning, grit-blasting).

This inspection should be done while Traveling block is laid down with sheaves not subjected to any load.

4.5.4.1. Field Inspection – CAT III (six months)

- Visual check of the side plates and other load bearing items (connection to the hook, Elevator link eyes etc.) For damage or cracks.
- Visually check for any missing locking pins of the block attachment connections.
- Visually check the accessed part of the sheaves for wear or cracks. Verify the groove depth and compare it with the maximum wear limits identified in by OEM recommendations.
- Check the wear of the bearings (pry bar) and ensure equal spacing between sheaves.
- Check the condition and content of the Manufacturer's Name plate.
- Check condition of the paint.
- Prepare and submit the inspection report.

4.5.4.2. Full Inspection – CAT IV (Five years)

Complete the full CAT III every six months' inspection in addition to the following:

- Fully disassemble the traveling block and clean all individual items. Mark or document the position of the components.
- Perform all required NDT inspections on the side plates, sheaves hub/web welding areas, shaft and other load bearing items. Mark any crack, damage or "out of tolerances wear" visible on the items.
- Measure and document the wear of the sheaves (including the remaining wall thickness of the sheave rim) and reference the value to OEM recommendations
- Reassemble the traveling block using new bearings and seals. Use the sheave with the largest remaining wall thickness (shoulder thickness) as the "fastest" sheave.
- Check the condition and content of the Serial Number plate.

Below is the guide of thorough visual inspections needed to be carried out on the monkey board and stabbing board (according to API 8B and various OEM recommendations)

- Traveling Block Assembly: Serial Number, Sheaves Number, Sheave Diameter
- Serviceability conduction: Sheaves, Grooves in Gage, Spacers or Seals, Grease Fittings, Bearings, Drilling Line Guards
- Block Attachment: Pins and Bolts, Safety Pins / Keepers, Welds

Note: Any defects found must be reported to the Technical Operations group for the correct remedial actions.

4.5.5. Drilling hook / hook block combination

Ensure that all equipment is thoroughly cleaned prior to commencing any inspection and all foreign material such as dirt, paint, grease, oil, scale, etc. Are actually removed from the concerned parts by a suitable method (e.g. Paint-stripping, steam- cleaning, grit-blasting).

Note: Any defects found must be reported to the rig operators maintenance/ assets integrity manager for the correct remedial actions

4.5.5.1. Field Inspection – Cat III (six months)

- Visually check the hook body and other load bearing items (link ears, hook, bail and bail support) for
- Damage or cracks.
- If found any initiation of cracks in the load bearing areas, MPI is recommended to verify the crack condition.
- Visually check bail pins, tongue latch pins and all locking nuts and cotter pins for any damage, looseness or missing parts.
- Check to insure tongue latch operates properly and tongue swings freely.
- Check for fluid leaks. Check the bearing clearance.
- Check the condition of the paint.

4.5.5.2. Full Inspection – Cat IV (Five years)

Complete the full Cat III every six-month inspection in addition to the following:

- Fully disassemble the hook and clean all individual items.
- Mark or document the position of the components.
- MPI the upper bow and bolts, link ears, hook, spring and retainer pin of the latch assembly and critical areas of the body.
- Mark any crack, damage or "out of tolerances wear" visible on the items.
- Measure and document the wear of bearing and link ears, bail and hook area and compare it with API spec 8C.
- Check the condition of the Manufacturer's name plate.
- Reassemble the Drilling hook and fill up oil. Check for oil leaks.
- Carry out one function test (dampening and rotation of the snubber).

Note : Any defects found must be reported to the rig operators maintenance/ assets integrity manger for the correct remedial actions

4.5.6. Top drive systems

4.5.6.1. Field Inspection Cat III (every six months)

- Visually check the welds on the top drive frame, guard, mounts and supports for cracks or damage.
- Visually check the condition of all bolted connections (including lock pins).
- Visually check pins and pin holes for wear and damage.
- Visually check hydraulic cylinders, hoses, fittings and connectors and check for any oil leaks.
- Visually check the guide rails (or torque tubes) for any wear, damage, proper assembly and alignment.
- Visually inspect the "hang off" line (including shackles, bolts, nuts etc.) And MPI the connections of the hang off line.
- Visually check the condition of blower frame welds and junction boxes mounted on top drive unit.
- Remove the wash pipe assembly; check the upper quill shaft liner or connection for any erosion and measure the shaft end play (compare the measurement with OEM maximum limits)
- All required NDT inspections for critical areas as per manufacturer's recommendation (including the pipe handler link tilt catches /retainers – link tilt cylinders ends – link tilt clamps).
- Check the condition and content of the manufacturer's name plate.

4.5.6.2. Gooseneck Assembly Inspection – (Two years)

- Completely disassemble the gooseneck assembly and remove it from the top drive bonnet.
- Visually inspect the mud line pipe, S pipe, hammer unions, seals, and threads for any damage, pitting or
- Excessive corrosion.

- Perform all required NDT inspections "PT (Liquid penetrant)/MPI..etc inspection on all the hammer unions and wireline plug threads.
- Perform a wall thickness measurement (UT) on the mud line, extension pipe and S-pipe and compare it with
- The OEM and ASME B31.3 minimum requirements.
- Check the condition of secondary retention between the gooseneck and rotary hose

4.5.6.3. Full Inspection – Cat IV (Five years)

Complete the full Cat III every six months inspection in addition to the following:

- Fully disassemble the top drive to the extent necessary to permit full inspection,
- MPI/measurement of all primary load carrying components and other Components which are critical to the equipment, as per manufacturer's instructions.
- Measure and record the wear of the guide rails or torque tubes and compare with maximum allowable tolerances as per OEM.
- Drive motor
  - Completely disassemble the motor.
  - Steam clean the internal metal and insulated parts with a non-caustic cleaner (Do not exceed 30 to 40 PSI steam pressure).
  - Blow out the inside of the stator with clean, dry compressed air.
  - Check the insulation resistance of the stator and rotor coils and record results.
  - Varnish and bake the motor coils.
  - Replace the drive and connection end bearings.
  - Conduct a dimensional measurement on the armature shaft including the bearings fit area.
  - Conduct an MPI on the armature shaft to check any cracks or discontinuities.
  - Check the condition of the hub/pinion and brake pads/discs; replace if they are not complying with the OEM requirements.
  - Reassemble the motor.
  - Follow OEM overhauling procedures and requirements and international standards

Moreover, CAT IV shall include but may not be limited to:

Drilling motors

- Remove and fully overhaul the drilling motor(s)
- MPI the pinion gear and brake hub after installation back on motor shaft
- On re-installation replace all O-rings, gaskets.
- Torque the motor bolts and record torque value in the work order notes
- Measure the pinion to compound gear backlash
- Record measured value in the work order notes or data book
- Follow OEM overhauling procedures and requirements and international standard

Gearbox

- Remove lower gear case
- Remove bull gear and NDT bull gear hub
- Remove compound gear assemblies
- Strip down High and Low gear assemblies
- Visually inspect and MPI High and Low gear assemblies
- Strip down main shaft assembly "
- Grit blast and NDT upper and lower gear case bodies and bonnet
- Thoroughly clean and re-assemble all parts and subassemblies with new bearings and seals
- Follow OEM overhauling procedures and requirements and international standards

Cooling system

- Strip and clean spark arrestors
- Clean and inspect ducting for holes or other damage, replacing as required
- Remove the blower motor assembly and clean thoroughly

- Repair or replace impellor if necessary
- Overhaul of electrical motor
- Follow OEM overhauling procedures and requirements and international standard

Brake assembly

- Disassemble and inspect for damage, overheating and corrosion
- Perform all required NDT inspections for Brake mechanism
- Replace worn pads / Brake blocks
- Thoroughly clean and re-assemble brake
- Follow OEM overhauling procedures and requirements and international standards

Lubrication system

- Replace or fully overhaul the lube oil pump
- Overhaul electrical motor
- H. Follow OEM overhauling procedures and requirements and international standard s

Counter balance system

- Grit blast and MPI chains, clevises, pins and pear links (shackles)
- Inspect and recharge accumulator bottles.
- If accumulator bottles are older than 10 years, they must be renewed
- Pressure test counterbalance relief valve
- Overhaul counterbalance cylinders, pressure test and recharge with Nitrogen
- Overhaul counterbalance valves
- Rotating Head: o Completely strip down
- Check bores of clevises for wear and MPI clevis and clevis mountings
- Inspect actuating cylinder and indexing mechanism
- Follow OEM overhauling procedures and requirements and international standard

Main Shaft

- Strip down main shaft assembly
- Full visual and dimensional inspection, MPI and UT inspection
- Inspect landing collar area for wear or damage, measure landing collar groove,
- Measure shaft outside diameter, measure shaft inside diameter
- Inspect spline for wear, Measure and record main shaft end play
- Follow OEM overhauling procedures and requirements and international standard

Bonnet assembly

- Remove the S-Pipe assembly
- Inspect flange surfaces for damage, corrosion or signs of wash out o
- Carry out wall thickness test on wash pipe
- Remove gooseneck and inspect flange surfaces for damage, corrosion or signs of wash out.
- Carry out U/T wall thickness for gooseneck
- Remove wash pipe assembly and replace with new wash pipe and seals
- Follow OEM overhauling procedures and requirements and international standard

IBOP

- Strip down IBOP assembly
- MPI actuator shell and connections

Pipe handler

- Complete strip down and grid blast
- MPI support shaft, jaws, frame, shaft welds, torque tube, stabilizer, actuator mechanism, guards and all pins
- Overhaul and renew seal kits of all hydraulic cylinders Link tilt assembly

- Complete strip down, grit blast and MPI base, lever assembly and stop assembly

Swivel yoke

- Grit blast and MPI yoke, lugs and pins
- Measure and record pin shaft clearance

Dolly frame and torque bar

- Completely strip down
- NDT inspection of all dolly wheel pins and all dolly wheels (Renew if cracks are found)
- Inspect (renew) dolly wheels
- NDT inspections of entire torque bar Upon completion, all bolts and nuts need to be secured
- With locking wire for DROPS as per OEM instructions.
- Details of replacement parts installed shall be noted on the certification.
- All areas measured and calipered shall be noted against OEM tolerance on the report.

All the above are considered as a Minimum requirement guideline and instructions which shall meet the OEM requirements and international standards

Note : Top drives will be subjected to a dyno test for electrical and hydraulic systems at the discretion of rig operator's maintenance managers.

4.5.7. Elevator links

Ensure that elevator links is thoroughly cleaned prior to commencing any inspection and all foreign material such as dirt, paint, grease, oil, scale, etc. Are actually removed from the concerned parts by a suitable method (e.g. Paint- stripping, steam-cleaning, grit-blasting).

4.5.7.1. Full Inspection – Cat III (Six Months)

- Check the Serial No. And Manufacturer's stamps.
- Visually check the Elevator Links for damage or cracks.
- NDT MPI/UT the whole link, measure the eye thickness for wear, identification on both eyes.
- Measure length, elongation and check straightness of both links.
- Down grade the links as necessary according to the actually measurement compared by OEM requirements

4.5.7.2. Full Inspection – Cat IV (Annually)

- Check the Serial No. And Manufacturer's stamps.
- Sand blast links as per the requirements of the qualified inspector.
- Visually check the Elevator Links for damage or cracks.
- MPI the whole link, measure the eye thickness for wear identification on both eyes.
- Measure length and check straightness of both links.
- Down grade the links as necessary according to the measured wear to the new maximum load limits.

4.5.8. DP, DC, Elevators, Inspection Requirements

Ensure that elevator links is thoroughly cleaned prior to commencing any inspection and all foreign material such as dirt, paint, grease, oil, scale, etc. Are actually removed from the concerned parts by a suitable method (e.g. Paint- stripping, steam-cleaning, grit-blasting).

4.5.8.1. Full Inspection – Cat III (every six months)

- Measure the wear on the body parts, door, hinge pin, latch, latch pin, latch spring stop, latch lock bolt, door lock pin, latch cam and all other load bearing components and compare the measurements with the maximum wear tolerances.
- MPI all of the above items as per the relevant API and manufacturer's manuals.
- For Y-type Elevators: check the slip visually, inserts, slip bolts, insert retainers, slip setting rings

and guide plates for damage or wear.
- MPI the following items: slip elements, slip bolts, insert retainers and guide plates.
- Measure clearance of hinge pin, latch pin and link ear thickness.
- Inspect the wire line of the single joint elevators for any damage, kinks etc.
- Measure bore taper angle, ID and height of center bore of type B and G elevators, Measure ID and thickness of top and bottom bore of R, T and S type elevators.
- Reassemble the elevator with new springs.

4.5.8.2. Full Inspection – Cat IV (Annually)

- Sand blast the elevator to the qualified inspector's requirements.
- Measure the wear on the body parts, door, hinge pin, latch, latch pin, latch spring stop, latch lock bolt, door lock pin, latch cam and all other load bearing components and compare the measurements with the maximum wear tolerances.
- MPI all of the above items as per the relevant API and manufacturer's manuals.
- For Y-type Elevators: check the slip visually, inserts, slip bolts, insert retainers, slip setting rings and guide plates for damage or wear.
- MPI the following items: slip elements, slip bolts, insert retainers and guide plates.
- Measure clearance of hinge pin, latch pin and link ear thickness.
- Inspect the wire line of the single joint elevators for any damage, kinks etc.
- Measure bore taper angle, ID and height of center bore of type B and G elevators, Measure ID and thickness of top and bottom bore of R, T and S type elevators.
- Reassemble the elevator with new springs.

Note:

Any defects found must be reported to rig management for the correct remedial actions.

Any repair and/or welding only to be done by a qualified company according to the OEM's instructions. Load test after repairs is required with additional MPI after the load test.

4.5.9. Rotary table

4.5.9.1. Field Inspection – Cat III (every two years)

- Review all PMS records before starting CAT III inspection
- Take the rotary table (or the complete rotary table skid) out of the substructure.
- Check the connections from the rotary table to the rotary beams and to the skid visually for any damage or cracks.
- Check the rotary manual lock system (pin and hole) for any damage or cracks.
- Check the "back lash" and the condition of the sprocket or the coupling.
- Perform MPI on the lock pins and the connection system to the rotary beams and skid.
- Measure the table opening and master bushing for proper fit and any damage or wear.
- Check the condition of the manufacturer's name plate.
- Check the paint condition of the table and the complete skid.
- Check the Condition of the air brake housing
- Confirm that Electrical cables and J-boxes are designed to work in hazardous areas EX
- Check Noise and vibration levels periodically
- Ensure that DC motor air suction from outside the hazardous areas and spark arrestor on the discharge side
- Check the condition of the main bearingEnsure the Condition of the Safety matting around rotary table
- Verify the Locking system through function test
- Function test 120 rpm for 30 minutes in on right-hand rotation
- Function test left-hand rotation at slow speed
- Check Bushing pullers to be included in the Lifting-Gear Register and NDT inspections

- Check that Rotary table DC motor equipped with spark arrestors.
- Check that the purge alarm sensor installed in between the spark arrestors
- Check the bearings and bearing race serviceability condition
- Check for wear indications in the tapered inserts and master bushings
- Check the condition of Anti-slip matting must
- Preform NDT – MPI for all installation safety Pins and housing

4.5.9.2. Full Inspection – Cat IV (every five years)

Complete the full Cat III every two years' inspection in addition to the following:

- Take off the main rotary table cover and inspect the condition of the main bearings.
- Clean the rotary table housing completely.
- Check in detail the condition of the gear box and drive components such as the sprockets, couplings and propeller shafts (if applicable).
- Preform NDT- MPI/UT Complete inspection for Rotary table, Muster bushing and inserts as Per required by standard reference and OEM requirements

Note: The above are the minimum Requirements and User shall follow and comply with OEM requirements and international standards

4.5.10. Kelly drive bushing

4.5.10.1. Field Inspection – Cat III (Six months)

- Dismantle the kelly drive bushing.
- Visually check the rollers, drive pins, cover plate and bolts and nuts for any damage or cracks.
- Applying NDT for all critical areas based on OEM requirements and applicable international standards
- Check the wear of the roller bearings.
- Measure the wear of the rollers, drive pins (for pin drive). Refer to the manufacturer's wear limits.
- Perform MPI on all critical welds on the housing and the drive pins and check the threads of the "hold down bolts" for damage or cracks.
- Check the condition and details of the manufacturer's name plate.
- Check the paint condition and repaint as required.
- Assemble the drive bushing and carry out one function test. Check for any loose items.

4.5.10.2. Full Inspection – Cat IV (Two years)

- Complete the full Cat III every six month inspection in addition to the following:
- Fully disassemble the Kelly drive bushing and measure and record all main components and compare measurements with wear limits.
- Perform MPI on all main items per the manufacturer's specification.
- Prepare and submit the inspection report.
- Rig Contractors have to follow OEM procedures and applicable international standards

4.5.11. Master bushing

4.5.11.1. Full Inspection – Cat III (every six months)

- Visually check the master bushing for any damage or cracks.
- Measure the wear of the bushing. Refer to the manufacturer's wear limits.
- Perform MPI on the master bushing and pin.
- Check the availability and condition of the manufacturer's Serial No.
- Grease the bushing.

4.5.11.2. Full Inspection – Cat IV (Annually)

Note 1: inspection is the most important aspect of preventive maintenance, the Inspection consists of observing, measuring, and testing.

Note 2: There is wear in the 1D of the rotary table which gives insufficient support for the master bushing itself.

- The OD of the master bushing is worn.
- There is excessive wear in the taper and the throat 10.

Note 3: the below mentioned checks are considered as guideline and instructions and rig contractors have to follow the OEM recommendations and applicable international standards

- Visually check the master bushing for any damage or cracks.
- Measure the wear of the bushing. Refer to the manufacturer's wear limits.
- Perform MPI on the master bushing and pin.
- Check the availability and condition of the manufacturer's Serial No.
- Check top diameter of bushing bore and inspect bowl seat for burrs and peened-over edges;
- File or grind flush as required. This procedure will ensure easy installation and proper fit.
- Grease the bushing.
- Repaint as required.

Note 1: Any defects found must be reported to Rig management for the correct remedial actions.

4.5.12. Insert bowls

4.5.12.1. Full Inspection – Cat IV (every six months)

- Remove both Half of the Drilling Bowls outside of master bushing using proper lifting chain Sling.
- Visually inspect the inner and outer surface areas of the bowl for any burrs and peened-over edges.
- Clean the inside taper of the insert bowls from any abrasive materials.
- Hold a straight edge against the tapered area to measure the tapper length (It should be as per the OEM recommendations).
- Measure the taper angle & throat diameter and compare with the OEM recommendations.
- Perform MPI on the recess and load bearing areas of the Drilling Bowls.
- After completing the inspection, Lubricate the back of the drilling Bowls before assembling in the master bushing.
- Insert the drilling bowls inside the master bushing using the proper lifting chain sling.
- Observe the height of set slips in the master bushing and ensure that it is not riding low in it (master bushing can also share the reason).

4.5.12.2. Full Inspection – Cat IV (every six months)

- Remove both Half of the Drilling Bowls outside of master bushing using proper lifting chain Sling.
- Visually inspect the inner and outer surface areas of the bowl for any burrs and peened-over edges.
- Clean the inside taper of the insert bowls from any abrasive materials.
- Hold a straight edge against the tapered area to measure the tapper length (It should be as per the OEM recommendations).
- Measure the taper angle & throat diameter and compare with the OEM recommendations.
- Perform the required NDT inspections on the recess and load bearing areas of the Drilling Bowls based on the international standards and applicable international standards.
- After completing the inspection, Lubricate the back of the drilling Bowls before assembling in the master bushing.
- Insert the drilling bowls inside the master bushing using the proper lifting chain sling.
- Observe the height of set slips in the master bushing and ensure that it is not riding low in it

(master bushing can also share the reason).

- Replace the API drilling bowls when throat measurement exceeds 10.718 inches (276 mm) on extended API bowls or based on the OEM requirements or other applicable standards

4.5.13. DP, DC, casing slips and power slips

4.5.13.1. Full Inspection – Cat IV (every six months)

- Visually check the slips for any damage, missing parts or cracks.
- Dismantle the slips as far as possible into single components.
- For Power slips: visually check the split top cover, slip hangers, split bowl assembly split guide ring, springs, hinged connections and slips for any damage.
- For Rotary, DC and Casing slips: visually check for damage, deformation or cracks on the hinge brackets, slip segments with tail slots, handles and hinge pin.
- Perform MPI as per Manufacturer's recommendation of hinged connections, body (inside and outside) handles, guide halves, slip hangers, slips, top cover halves etc.
- Measure the wear of the hinge connections, door and pin holes, dovetail slots etc. As per manufacturer's recommendation.
- Reassemble the slips, grease and paint.
- Check the condition and content of the name plates or stamped part No's.
- For Power slips: Perform one function test.

Note : Any defects found must be reported to the rig management for the correct remedial actions.

4.5.14. Spider / elevator

4.5.14.1. Field Inspection – Cat III (every six months)

- Disassemble the units as far as necessary and possible and clean all single parts.
- Check all components visually for any cracks, damage and bends etc.
- Perform MPI on hinged connections, body (inside and outside) including guide pin cases, guide halves, slip hangers, slips and top cover halves.
- For Spiders: Visually check for damage and wear on the yoke assembly, slip lock assembly, body (inside and outside), door, door pins, guide plate assemblies, hinge pins, insert retainers, link blocks with link block pins, slips and dovetail slots.
- MPI body (inside and outside), yoke, slips, hinge connections, door, door pins, guide plate assy. And link blocks.
- Check condition and details of the manufacturer's name plates.
- Assemble the units and refurbish painting and marking as required.

4.5.14.2. Full Inspection – Cat IV (every one year)

Complete the full Cat III every six months inspection in addition to the following:

- Disassemble the spider / elevator completely.
- Measure and record all main components and compare with wear limits.
- Perform full MPI as per manufacturer's requirement.
- Prepare and submit the inspection report.

4.5.15. Safety clamp

4.5.15.1. Full Inspection – Cat III (every six months)

- Visually check for cracks, deformation, missing cotter pins, deformed nuts, broken slip springs and movement of slips.
- Visually check all threads for wear and stretching.
- Perform full NDT- MPI on all slip elements, pins and hold studs.
- Check dies wear crack and serviceability condition "Replaced if needed "

- Reassemble the clamp.
- Lubricate and preserve safety clamp.

4.5.15.2. Full Inspection – Cat IV (Annually)

- Check main body for Wear, distortion, damage, nicks, gouges, cracks, corrosion, etc.
- Check Jaws for Wear, distortion, damage, nicks, gouges, cracks, corrosion, etc.
- Check suspension points for Wear, distortion, damage, nicks, gouges, cracks, corrosion, etc.
- Check clamp mechanism and serviceability
- Dismantle the safety clamp components.
- Visually check for cracks, deformation, missing cotter pins, deformed nuts, broken slip springs and movement of slips.
- Visually check the threads.
- Perform full NDT- MPI on all slip elements, pins and hold studs.
- Check dies wear crack and serviceability condition
- Reassemble the clamp.
- Lubricate and preserve safety clamp.

4.5.16. Manual tongs for DP, DC and casing

4.5.16.1. Full Inspection – Cat III (every six months)

- Clean the surface from oil, grease, sand, paint and loose rust which may interfere with satisfactory inspection.
- Carry out MPI according to OEM requirements and applicable international standards
- Measure hinge pins and hinge pin holes for wear (see OEM's recommendation for max. Clearance).
- Examinations must be performed with sufficient overlap to ensure 100% coverage of the area or part under inspection.
- Carry out the required NDT inspections according to ASTM E709 and compare defects to ASTM E125

4.5.16.2. Full Inspection – Cat IV (Annually)

- This inspection should include NDT of critical areas and will involve disassembly the tong to access specific components and to identify wear that exceeds the manufacturer's allowable tolerances.
- Disassemble the tongs.
- Visually check all main components (lever, long jaw, latch lug jaw, short jaw, latch, hinge law) for damage, bending or cracks.
- Measure hinge pins and hinge pin holes for wear (see OEM's recommendation for max. Clearance).
- Perform NDT- MPI on lever, long jaw, latch lug jaw, hinge jaw, hinge pins, latch and hanger. Disassemble the following parts of the tong for dimensional check according to maximum allowable wear:
  - Hinge pins
  - Latch pins
  - Hinge pin holes
  - Latch pin holes
  - Jaws/Latches
  - Reassemble tongs and repaint and grease as required.

Note: Maximum allowable wear to maintain 100% torque rating should be recorded and cross referenced against OEM wear data

4.5.17. Kelly spinner

4.5.17.1. Field Inspection – Cat III (every six months)

- Break off the kelly spinner from the kelly.
- Visually check the bearing clearance and check for any damage, wear or cracks.
- Visually check the air or hydraulic system (piping, hoses, fittings, filters etc.)
- Disassemble the air (or hydraulic) motor from the spinner housing and visually check the condition of the motors (bearing clearance, condition of shaft, sprocket etc.)
- Perform the required ndton the threads, hinge eyes of turnbuckles and upsets of stem.
- Measure the thread of the kelly drive sub for pin stretching and bore diameter.
- Visually check the pinion, gears, spinner body (inside and outside), inner threads and sealing of connections for damage and wear.
- Reassembly the kelly spinner and repaint as required.
- Check condition and details of the manufacturer's name plate.

4.5.17.2. Full Inspection – Cat IV (every five years)

Complete the full Cat III every six months inspection in addition to the following:

- Fully disassemble the kelly spinner and the drive components.
- Measure and record all main components and compare with wear limits.
- After repair (if applicable) carry out function test and performance test to the maximum torque.

4.5.18. Draw works brake bands & linkages

4.5.18.1. Field Inspection - (Six months)

- Hang off traveling block and/or top drive (if applicable) on the dedicated hang off line or clamp device.
- Visually check the bands for any bends, twists, damage or cracks.
- Carefully check the correct installation, alignment and adjustment of the brake linkage system according to the OEM's recommendation.
- Perform NDT on the brake bands(dead and live end) and all connecting items such as brackets (including pins and holes), extension rods, equalizer beam with pins and brackets, eye bolts, bearing blocks (including the fastening bolts and nuts).
- Check for the correct length, position and condition of the main brake lever.
- Visually check the brake rims for grooving defects, uneven wear or cracks as per IADC drilling manual, Chapter F "Measure and record the wear, brake rim and water jacket thickness".
- Reassemble all items and repaint as required.

4.5.18.2. Full Inspection (each Five years)

Complete the full Cat III every six-month inspection in addition to the following based on the OEM requirements and international applicable standards:

- Completely disassemble the brake system and measure and record all items and compare with wear limits.
- Remove all air, water and lubrication piping and inspect condition.
- Remove all copper grease piping.
- Remove all chains and inspect condition.
- Disassemble and inspect all control valves.
- Remove foot throttle control valve, disassemble and inspect condition.
- Remove oil lube pump, disassemble and inspect condition.
- Disassemble rope rollers and inspect condition.
- Remove make-up and breakout catheads, disassemble for inspection.
- Remove transmission shifter, disassemble and inspect condition.
- Remove transmission shifter cylinder, disassemble and inspect condition.

- Remove braking system and brake bands, disassemble and inspect condition.
- Remove sand reel brake system and brake bands, disassemble and inspect condition.
- Remove drum-shaft, disassemble clutches and bearings for inspection.
- Remove transmission output shaft, disassemble for inspection of bearings.
- Remove transmission input shaft, disassemble for inspection of bearings.
- Remove low drum drive shaft, disassemble for inspection of bearings.
- Remove sand reel / cat-shaft, disassemble for inspection.
- Sand blast Draw works frame, guards and braking system.
- Inspect Draw works frame for any corrosion to main structural members
- Metal Particle Inspection should be carried out on all disassembled shafts, braking system and all load bearing areas in accordance with ASTM E-709.
- Prepare inspection and NDT MPI reports, repair recommendations, digital photographs of disassembly and assembly, parts list to expedite the CO

Note: All the above mentioned instructions are considered minimum requirements

4.5.19. Draw works disc brake

4.5.19.1. Field Inspection (Six months)

- Hang off traveling block on the dedicated hang off line or clamp device.
- Disassemble the components of the brake system that requires inspection.
- Clean the Caliper Arms and associated mounting components allowing visual inspection.
- Visually inspect all Brake structural members (calipers support arms, levers, connecting pins, shoe pins,etc.) For any cracks, corrosion or Weld defects. MPI is encouraged in case of any signs of cracks are found.
- Replace any worn components as required.
- Perform spring force testing and ensure the spring stiffness is as per the manufacturer`s recommendations Replace if required.
- Verify the brake disc thickness and ensure that it's within the manufacturer`s recommendations and check for any signs of cracks.
- Verify brake blocks for wear (Replace Brake Blocks if their thickness has reached the minimum limit as the manufacturer`s recommendations).
- Reassemble all items and repaint as required.
- Carry out brake efficiency test as per OEM guidance and record in the PMS.

4.5.19.2. Full Inspection (Five years)

Complete the full Cat III every six-month inspection in addition to the following:

- Completely disassemble the brake system.
- MPI all Brake structural members (calipers support arms, levers, connecting Pins, Shoe springs, shoe pins,
- Backing Plates) for any cracks, corrosion or Weld defects. Replace any worn components as required.
- Replace brake discs, brake blocks, calipers, springs, oil seals.
- Reassemble all items and repaint as required.
- Carry out brake efficiency test as per OEM guidance
- Prepare and submit the inspection report.

4.5.20. Deadline anchor

4.5.20.1. Field Inspection – Cat III (Six months)

- Hang off the top drive or travelling block, as applicable, on the dedicated hang off line or clamp and remove the drilling line from the dead line anchor drum.
- Visually check the anchor and foundation bolts, clamp with slips, line guards, bearing cap nuts, and bolts for any damage, corrosion and abnormal wear.

- Check the bearing clearance.
- Using a pry bar check for drum assembly to verify no play/wobbling.
- Visually check all the welding areas of the base assembly, line guards and the line clamp assembly. If in doubt, MPI should be carried out.
- Visually check the load cell for any leakage and damage and use the correct clearance gauge for checking of proper installation.
- Recharge with instrument fluid and recalibrate if necessary.
- Check condition and details of the manufacturer's name plate.
- Check Air gap records

Note: This inspection should be done while the dead line anchor is not subjected to any load.

4.5.20.2. Full Inspection – Cat IV (Five years)

Complete the full Cat III every six-month inspection in addition of the following:

- Remove the dead line anchor from the foundation.
- Disassemble the dead line anchor and perform MPI on the critical areas and foundation as per Manufacturer's recommendation.
- Carry out a Dimensional inspection.
- Replace Bearings, seals and any items that are deemed unserviceable.
- If any remanufacture of the Deadline Anchor is deemed necessary, then all such repairs shall be carried out in accordance with API spec 8C.
- Rebuild the anchor as required.
- Reinstall the anchor using new bolts of the correct grade and size as per OEM.
- Prepare and submit the inspection report.

Note: Any defects found must be reported to the rig management for the correct remedial actions.

4.5.21. Lifting plugs and subs

4.5.21.1. Full Inspection (every six months)

- Prepare lifting plug or sub for MPI (remove paint etc.). Visually check the body, thread and lifting bail (if applicable) for any damage wear or cracks.
- Perform MPI on thread and bail welding area (if applicable).
- Measure and record threads, ID of pin, lifting plate diameter, check for pin stretching.
- Check the serial numbers.

4.5.22. Tubular lifting cap

4.5.22.1. Full Inspection CAT IV (Six months)

- Clean the thread with cleaning wire brush.
- Visually inspect the thread and check for any galling or corrosion.
- Perform MPI inspection on the threaded areas (recommended the wet fluorescent magnetic particles method) and put it out of service if found any cracks check for thread stretching and wear.
- Check box swells or pin stretch using lead gauge. The allowable elongation should be within the tolerance range as per the OEM recommendations.
- Conduct a Visual inspection on bail area and check for any nicks or gouging.
- Perform required NDT inspection "MPI/UT" on all bail area including welding points.
- Perform a dimensional measurement on bail throat area and check for the deformation, throat opening, and wear limit. Any values exceed the manufacturer recommendations limits shall be cause of rejection.
- A load test certificate should be available, if not carry out load test by qualified inspector.

4.5.23. Utility /truck/ substructure raising winches

4.5.23.1. Fields Inspection CAT III (Six Month) By a Qualified Inspector

- Isolate the winch by shutting off the air, unwind the winch line from the drum and inspect the line visually for any kinks, broken lines and other damage.
- Remove the winch from the foundation plate or mounting brackets.
- Visually check all outside parts of the winch (including the spooling device and control valves) for proper installation and any damage or wear.
- Perform NDT on the brake band and associated components.
- Perform NDT on winch connecting points to the mounting bracket or plate, bolts, clamp area etc. As per manufacturer's recommendations
- Check the condition and details of the manufacturer's name plate.
- Ensure the SWL is clearly marked.
- Perform NDT on the turndown sheave attachment point in the mast.
- Perform inspection on all line attachments (turndown sheave, shackles, swivels etc).

4.5.23.2. Full Inspection CAT IV (Annually) By a Qualified Inspector

- Isolate the winch by shutting off the air, unwind the winch line from the drum and inspect the line visually for any kinks, broken lines and other damage.
- Remove the winch from the foundation plate or mounting brackets.
- Perform NDT over the foundations plates and pins
- Visually check all outside parts of the winch (including the spooling device and control valves) for proper installation and any damage or wear.
- Perform NDT on the brake band and associated components.
- Perform NDT on winch connecting points to the mounting bracket or plate, bolts, clamp area etc. As per manufacturer's recommendations
- Check the condition and details of the manufacturer's name plate.
- Ensure the SWL is clearly marked.
- Perform NDT on the turndown sheave attachment point in the mast.
- Perform inspection on all line attachments (turndown sheave, shackles, swivels etc).
- Reinstall the winch.
- Carry out load test (to the SWL) based on OEM requirements and international applicable standards

4.5.24. Man riding winches

4.5.24.1. Field inspection (Six Month)

- Isolate the winch by shutting off the air, unwind the winch line from the drum and inspect the line visually for any kinks, broken wires and other damage.
- Remove the winch from the foundation plate or mounting brackets.
- Visually check all outside parts of the winch (including the spooling device and control valves) for proper installation and any damage or wear.
- Visually check the brake band components and mechanism for wear or damage.
- Perform MPI on winch connecting points to the mounting bracket or plate, bolts, clamp area etc. And on all main components as per manufacturer's recommendation.
- Check condition and details of the manufacturer's name plate.
- Repaint the winch (including the SWL marking) as required.

4.5.24.2. Full Inspection (every one year)

- Isolate the winch by shutting off the air, unwind the winch line from the drum and inspect the line visually for any kinks, broken wires and other damage.
- Remove the winch from the foundation plate or mounting brackets.
- Disassemble the complete winch including drive components.

- Visually check all outside parts of the winch (including the spooling device and control valves) for proper installation and any damage or wear.
- Visually check the brake band components and mechanism for wear or damage.
- Perform MPI on winch connecting points to the mounting bracket or plate, bolts, clamp area etc. And on all main components as per manufacturer's recommendation.
- Check condition and details of the manufacturer's name plate.
- Repaint the winch (including the SWL marking) as required.
- Reinstall the winch.
- Carry out load test (to the SWL).

4.5.25. Rotary swivels

4.5.25.1. Field Inspection – Cat III (every six months)

- Visually check the body, bail, bottom connection and gooseneck for any damage, wear or cracks.
- Replace (if not already done) the 2" thread connection on top of the gooseneck with one butt welded connection.
- MPI the critical load bearing items of the swivel like the bail, bail connection and bottom connection.
- Carry out wall thickness measurement of the gooseneck.
- Check condition and details of the manufacturer's name plate.
- Repaint as required.

4.5.25.2. Full Inspection – Cat IV (every five years)

Complete the full Cat III every six months inspection in addition to the following:

- Disassemble the Rotary Swivel to the extent necessary to conduct MPI/PT of all primary load carrying
- Components as defined by manufacturer and ensure that all individual items are cleaned (Mark or document the position of each of the components).
- Measure and document the wear of all components as necessary.
- If any remanufacture of the Rotary Swivel is deemed necessary then all such repairs shall be carried out in accordance with API RP 8B and OEM recommendations.
- Replace all bearings and seals.
- Reassemble the Rotary Swivel.
- Check and record the condition and content of the Serial Number plate.
- Prepare and submit an inspection report which should contain all details related to the inspection, remanufacture and reassembly of the Rotary Swivel.

4.5.26. D. spools, flanges, diverter & valves

4.5.26.1. Full Inspection – Cat IV (every five years)

- Visually check the equipment for any damage or cracks.
- Measure and record the ring joint grooves, flange thickness, bolt hole size and number of holes.
- Perform MPI on the welds between the body and flanges.
- Pressure test to maximum working pressure and record.
- Check the manufacturer's name plate or stamps.
- Check the material certificates of the equipment and if they are missing or incomplete conduct a material test.
- Repaint the equipment as required.

4.5.27. Hub clamps

4.5.27.1. Fields Inspection – Category III (verify Six month)

- Visually check the clamp and clamp with bolt and nut for any damage or cracks.
- Perform MPI on the hub and the clamp (including the bolt) and the weld between the hub and body (if any).
- Check the manufacturer's name plate or stamp.

4.5.27.2. Full Inspection – Category IV (every five years)

- Visually check the clamp and clamp with bolt and nut for any damage or cracks.
- Measure and record the hub details, bolt and nut size.
- Perform MPI on the hub and the clamp (including the bolt) and the weld between the hub and body (if any).
- Check the manufacturer's name plate or stamp.
- Check the material certificates of the equipment and if they are missing or incomplete conduct a material test.
- Refurbish painting of the equipment as required.
- Prepare and submit the inspection report.

4.5.28. Ram type bop

4.5.28.1. Field Inspection – Cat III after " up to 2 years from the last CAT IV inspection Upon commencement to new well the following to be performed as a minimum

- Visually check the body, flanges, bonnet bolts, threads and other main components for damage, wear or cracks.
- Visually check sealing surfaces on the body, door, piston, intermediate flange, ram change piston, ram change cylinder and operating cylinder.
- Inspect all rubber seals, gaskets, O-rings and Ram packing; replace components according to their physical condition.
- Perform pressure testing and drawdown test and record the Closing and opening time

• Each two year from the Last CATIV the following inspection shall be performed

- Completely disassemble the BOP.
- Visually check the body, flanges, bonnet bolts, threads and other main components for damage, wear or cracks.
- Visually check sealing surfaces on the body, door, piston, intermediate flange, ram change piston, ram change cylinder and operating cylinder.
- Inspect all rubber seals, gaskets, O-rings and Ram packing; replace components according to their physical condition.
- Measure and record the wear on the ram cavities & all bonnets and check for cracks.
- Measure and record flange ring grooves (lower, upper and side outlets).
- Reassemble the BOP.
- Carry out NDT based on the OEM requirement and international applicable standards
- Carry out function test (with rams installed).

Note: In case of three years schedule major inspection is contractually required; the field inspection will not be performed with the precautions that BOP cavities condition and measurements are being verified every one year.

4.5.28.2. Full Inspection – Cat IV (every five years) By OEM or OEM Approved Inspector

- Completely disassemble and sand blast the BOP.
- Visually check the body, flanges, bolts, threads and other main components for damage, wear or cracks.
- Measure and record the wear on the ram cavities & all bonnets and check for cracks.
- Perform NDT on the BOP hoisting eyes and the weld between the flange and body.

- Check sealing surfaces on the body, door, piston, intermediate flange, ram change piston, ram change cylinder and operating cylinder. Replace seals with new.
- Measure and record flange ring grooves (lower, upper and side outlets).
- Check hydraulic system and connections.
- Perform MPI on all load bearing items (Ram blocks, body, flanges, pistons, operating cylinder, doors, bonnets, cavity area, bolts etc.) As per manufacturer's recommendation.
- Perform individual body pressure test as per manufacturer's recommendation.
- Reassemble the BOP.
- Carry out function test (with rams installed) followed by one pressure test to WP.
- Repaint the BOP (primer coat and final coat).
- Preserve for storage and tighten on BOP transport skid.

Note: Use only original OEM parts.

4.5.29. Bag type bop annular

4.5.29.1. Field Inspection – Cat III (Annually)

- Perform MPI on all load bearing items as per manufacturer's recommendations.
- Perform MPI on the BOP hoisting eyes and the weld between the flange and body
- Visual check for the elastomers condition , ensure that no cracks found
- Check all hydraulic system and connections.

4.5.29.2. Full Inspection – Cat IV (every five years)

- Completely disassemble and sand blast the BOP.
- Perform MPI on all load bearing items (body, preventer head, flanges, piston, sleeve, sealing and thread areas etc.) As per manufacturer's recommendation.
- Perform MPI on the BOP hoisting eyes and the weld between the flange and body.
- Measure and record the dimensions of BOP head, piston, body, lower flange, sleeve and adaptor ring (if exist), etc. Verify the measured dimensions are within the OEM tolerances/ recommendations.
- Replace the annular packer, upper& lower piston seals, inner& outer head seals, and lower & upper adaptor ring seals (if any).
- Check all hydraulic system and connections.
- Individual body pressure test as per manufacturer's recommendation.
- Reassemble the BOP.
- Carry out function test (with installed packing unit) followed by one pressure test to working pressure.
- Check condition and details of the manufacturer's name plate.
- Repaint the BOP (primer coat and final coat).
- Preserve for storage and tighten on BOP transport skid.

Note : Use only original OEM parts.

4.5.30. Choke, kill and cement lines

4.5.30.1. General instructions

Ensure that all equipment is thoroughly cleaned prior to commencing any inspection. I.e. All foreign material such as dirt, paint, grease, oil, scale, etc. Shall be removed from the concerned parts by a suitable method (e.g. Paint-stripping, steam-cleaning, grit-blasting).

4.5.30.2. Fields Inspection – Cat III

Will be conducted in the following cases:

- Upon completion of the well and/or prior to installation of the equipment on a new well;
- Prior to any required pressure test of the equipment
  - Remove the paint from the areas to be inspected.

- Perform visual checking for the Choke/Kill Hose
- Preform Greasing using the OEM recommended grease
- Carry out pressure tests on all components to working pressure.
- Perform NDT for all safety clamps and lifting pad eyes

4.5.30.3. Full Inspection – Cat IV (every five years)

- Fully disassemble the HP valves and other components.
- Change all the valves seals and packing and check for the rising stem condition.
- Remove the paint from the areas to be inspected.
- Visually check all components including HP valves, hammer unions and sealing areas for any damage, deformation, wear, corrosion or cracks.
- Measure and record all the API flanges, according to API 6A.
- Measure and record the main components and compare with wear limits.
- Perform the required NDT inspection on all welds and sealing areas of HP valves based on OEM requirements
- Carry out and document wall thickness measurements on pipes (min. Three measurements per meter). Compare with maximum wear limits recommended by manufacturer and API RP 574.
- Carry out pressure tests on all components to working pressure.
- Repaint as required.
- Grease and preserve ring joints and sealing areas.
- Remove the Choke/Kill Hose from service and send it to an approved facility for the following:
- Visually inspect the choke and kill hoses steel outer Wrap for any damage, deep notches or cuts.
- Full internal Bore-O scope inspection
- Full pressure test to 1.5- 2 x Working Pressure according to hose API 16C specifications.
- MPI Inspection on all end fitting area

Note: Any defects found must be reported to the rig management for the correct remedial actions.

4.5.31. Chicksans and swivels

Ensure that all equipment is thoroughly cleaned prior to commencing any inspection. I.e. All foreign material such as dirt, paint, grease, oil, scale, etc. Shall be removed from the concerned parts by a suitable method (e.g. Paint-stripping, steam-cleaning, grit-blasting).

4.5.31.1. Full Inspection – Cat IV (every year)

- Completely dismantle the swivels.
- Visually check all pipes, swivels and hammer unions for damage, wear or cracks.
- Visually check all seals, seats and bearing housings in the swivels. Check bearing clearance. For tolerances refer to manufacturer's specification.
- Measure wall thickness on specific points over the full length of the pipes (minimum three (3) points per meter) and mark the checkpoints on a sketch or drawing.
- Measure wall thickness on complete swivels.
- Perform the required NDT inspections on the swivel and hammer union seal areas and on welds between pipe and swivel and hammer union.
- Reassemble the swivels and joints.
- Conduct pressure test on all components to working pressure.
- Repaint as required.

4.5.32. H.Hressure choke manifold & valves

Ensure that all equipment is thoroughly cleaned prior to commencing any inspection. I.e. All foreign material such as dirt, paint, grease, oil, scale, etc. Shall be removed from the concerned parts by a suitable method (e.g. Paint-stripping, steam-cleaning, grit-blasting)

4.5.32.1. Full Inspection – Cat III (Annually / upon commencement on new well operations):

- Visually check choke manifold and HP valves completely.
- Visually check all items for damage, wear, corrosion, erosion or cracks.
- Perform NDT on welds and hammer union sealing areas (inside and outside).
- Perform MPI on all welds, hammer unions, ring joints and valve seat areas
- Calibrate all pressure gauges.
- Perform pressure test to rated working pressure.
- Carry out full inspection on the remote control panel and gauges and stroke counter (if applicable).
- Check the condition and details of the manufacturer's name plate.

4.5.32.2. Full Inspection – Cat IV (every five years)

- Disassemble the choke manifold and HP valves completely.
- Visually check all items for damage, wear, corrosion, erosion or cracks.
- Measure wall thickness on specific points of the HP piping, T-joints and buffer manifold. Mark position of checkpoints on a drawing
- Perform NDT on welds and hammer union sealing areas (inside and outside).
- Measure and record all flange details and ring groove details for all valves, crosses and HP-T pieces.
- Disassemble all valves and chokes and inspect the items for damage, corrosion, erosion, wear or cracks.
- Perform MPI on all welds, hammer unions, ring joints and valve seat areas
- Calibrate all pressure gauges.
- Perform individual body test on buffer manifold to rated working pressure.
- Carry out full inspection on the remote control panel and gauges and stroke counter (if applicable).
- Check the condition and details of the manufacturer's name plate.
- Repaint as required.
- Prepare and submit the inspection report.

4.5.33. Standpipe and high pressure piping

4.5.33.1. Field Inspection (Annually) by a Qualified inspector

- Dismantle the stand pipe manifold and HP mud manifold into individual components as best as possible.
- Visually check all items for damage, wear, corrosion, erosion or cracks.
- Measure the wall thickness on specific points of the standpipe and HP piping, (two points per meter) and mark position of checkpoints in a drawing. Pay special attention to 90 degree elbows and T-pieces. All results shall be compared with the original thickness and the
- The approved third party shall identify the loss percentage and decide that the reading accepted or not based on the OEM requirements" these data shall be provided by rig operators and delivered to an
- Approved inspection third party
- Rig contractors shall perform data analysis for all wall thickness measurement to avoid any sudden deformation which may affect the equipment integrity and may lead critical well control or safety situation
- Check the HP hoses (drilling hoses and vibration hoses) for damage, cracks, rubber condition and wear.
- Visually check the safety clamps and lines.
- Only vibrator safety clamp shall be used
- Visually check all valve for damage, wear, corrosion, erosion or cracks and perform the required
- Greasing " Greasing procedures shall be according to the OEM requirements and rig

contractors shall adhere with the grease type
- Perform NDT on all welds and hammer union sealing areas (inside and outside).
- Perform Thread inspection against wear and thread stretching
- Reassemble the standpipe, HP piping and hoses (including manifolds) and pressure test all to working
- Pressure based on the OEM procedures or international applicable standard.
- New inspection report (stamp new inspection date on stainless steel band).
- Rig contractors shall follow OEM requirements and International applicable standards

4.5.33.2. Full Inspection (every five years)- by a Qualified Inspector

Complete the full Cat III every one years' inspection in addition to the following:
- Disassemble all valves from the stand pipe manifold and HP mud line manifold.
- Check all valve components for damage, wear, corrosion, erosion or cracks
- Check all valve sealing and serviceability condition
- Perform the required NDT inspection on all welds, ring joints (if applicable) and valve seat areas of the valves.
- Repaint all of the components
- New Cat V report inspection report.
- Rig contractors shall follow OEM requirements and International applicable standards

4.5.34. Rotary hoses &welded connections

4.5.34.1. Full Inspection – Cat III (Six Month)

- Visually check all items for damage, wear, corrosion, erosion or cracks.
- Visual Check the hoses fittings for damage, cracks, and wear.
- Visual Check the hoses outer layer for damage, cracks, rubber condition
- Visually /NDT check the safety clamps and secondary retention wire.
- Perform NDT on all welded areas and fittings

4.5.34.2. Full Inspection – Cat IV (every one year)

- Visually check all items for damage, wear, corrosion, erosion or cracks.
- Visual Check the hoses for damage, cracks, rubber condition and wear.
- Visually /NDT check the safety clamps and lines.
- Perform NDT on all welded areas and fittings
- Pressure test shall be performed on the hose using water and to a value equal to the maximum rated working pressure

4.5.35. Pulsation dampener

4.5.35.1. Field Inspection (every year) By a Qualified Inspector

- Check the manufacturer's name plate and serial number of the pulsation dampener.
- Release the nitrogen pressure and remove the pulsation dampener from the pump manifold.
- Remove all mud and dirt from the body and the connection flange and dismantle the dampener.
- Visually check all components (body, studs, nuts, threads and flange) for any damage, cracks and wear.
- Perform NDT on the ring groove and the welding between the body and the flange.
- Perform wall thickness based on the OEM original wall thickness "the certificates must mention the status accepted/ rejected based on the OEM original thickness "
- Visually Check the condition of the bladder and its condition
- Visually Check the bolts and bolts thread and bolts ports in the
- Recharge the bladder with nitrogen and ensure that the pre-charge pressure is equal to 1/3rd of the Operating Pressure

- Receiving the inspection report.

4.5.35.2. Full Inspection (every ten years) By a Qualified Inspector

Complete the full every one-year inspection in addition to the following:

- Perform MPI on the whole body and pressure test to working pressure (use a dummy seal).
- Replace all studs, nuts and fasteners with new items.
- Repaint all of these components.
- Perform wall thickness and review its analysis and statistics for all previous periods based on the OEM original wall thickness in order to ident is it serviceable for another period or shall be replaced
- Perform Hydro test inspection based on the OEM original wall thickness
- Rig contractors shall follow the OEM requirements and applicable standards

4.5.36. Bop accumulator unit

All rig contractors shall use four banks accumulator ONLY other two bank accumulators shall not be used within EGPC affiliated companies drilling and workover operations

4.5.36.1. Field Inspection (Six month) By a Qualified Inspector

- All lifting lugs or pad eyes
- Secondary retention wires
- Visually check all EX devices and its bolts

4.5.36.2. Field Inspection (every year) By a Qualified Inspector

- Calibrate all pressure gauges
- Calibrate all installed PRV, s
- NDT - UT inspection shall be done for all accumulator bottles
- Checks all units' alarms and ensure it is working effectively
- Visually check that the air alarm was set not less than 70 PSI
- Check bottles connection NDT MPI

4.5.36.3. Full Inspection – Cat IV (every five years)

- Visually check for any damage or leakage.
- Bleed the pressure off the system.
- Drain the hydraulic system and clean the inside of the oil tank.
- Visually check and clean all filters and lubricators.
- Perform MPI on the pressure lines to and from the bottles manifolds (connectors seal area and welds).
- Release the pressure from all accumulator bottles and remove all accumulator bottles from the manifold
- Check the condition of the pneumatic and triplex hydraulic pumps (drive components, suction and pressure lines etc.)
- Check condition of all position valves, 4 way valve, relief valve, reducing and regulating valve, shut off valves etc.
- Perform MPI on all connections of the bottles pressure manifold.
- Perform MPI on all connections (seal area and welds) of all high pressure pipes and lines.
- Check the complete electric system (including control lights and remote panels).
- Reassemble the unit.
- Fill with oil and adjust the manifold pressure and the annular pressure to manufacturer's requirements.
- Perform one function test. Record the startup time till operating pressure is reached.
- Record opening and closing time for each function and record the final pressure in the accumulator bottles at the end.
- Check condition and function of the remote control panel(s).

- Preserve, paint and grease the unit.
- Check condition and details of the manufacturer's name plate.

4.5.37. Accumulator bottles

4.5.37.1. Field Inspection CAT III (every one year) by a Qualified Inspector

- Perform NDT UT for all accumulator bottles
- Perform NDT – MPI for all Accumulator bottles connection welding
- Checking the serviceability of all isolation valves

4.5.37.2. Full Inspection (every five years)- by a Qualified Inspector

- Remove the accumulator bottle from service.
- Disassemble the bladder and the poppet valve assembly.
- Replace the bladder with a new one.
- Check for the condition of the poppet stem, spring, spacer and stop nut and Replace any O-rings or rubber parts installed.
- Conduct a wall thickness measurement on all the accumulator bottle shell area and compare it with minimum requirements (OEM recommendations).
- If the thickness is thinner than the recommended OEM value, that can be a cause of rejection and removal from service and replace with new one.
- Reassemble the accumulator, bladder and poppet valve assembly.
- Charge accumulator bottles to the manufacturer's requirements.
- Repaint the accumulator bottle.
- Prepare and submit the inspection report.

4.5.38. Mud pump relief valves

4.5.38.1. Field Inspection (every 90 Days)

- Remove the relief valve from the high pressure pump manifold.
- Disassemble the valve, check and clean internal and external components
- Visually check all parts for damage, cracks, corrosion and wear (especially on valve body and seat). Replace parts as required.
- Visually check the inlet and outlet piping for signs of deposits.
- Check the reset provision and function test of reset mechanism several times.
- Test the relief valve to ensure that it relieves at the set pressure stated using a certified monitoring gauge.
- The test shall include a minimum of 3 different pressures spanning the full range of the relief valve (including zero setting)
- The pressure relief valve manufacturer portable test kit with a proper test gauge (1/4 % full scale accuracy) and adapter flange is recommended to be used
- Adjust the pressure setting scale as required using manufacturer's recommendations.
- Check that the liner cooling plant reservoir was filled with coolant
- Grease valve and flanges (if applicable) and reinstall relief valve on the high pressure pump manifold. Set the required relief pressure.
- NDT inspections for the pony rod hubs & piston hubs and their clamps
- Visually check all fixed guard available on its location and connected well, and in a good condition N.

4.5.38.2. Field Inspection (Annually and Semi- Annually)

- NDT –MPI inspection for Swing arm service hoist "lifting and welding "Semi- annually"
- Transmission Belts fixed guard shall be NDT inspected " Semi- Annually"
- Prvs calibration "Annually"
- All Mechanical parts must be included on both inspection plan and PMS according to the OEM

recommendations
- Crank shaft lifting be considered as a part of mud pump hoist and must be include on the lifting register
- Rig contractors shall prepare routine visual and auditory inspections of the mud pump may catch cavitation before it becomes catastrophic
- NDT –UT inspection hall be conducted over all modules and thickness loss shall not exceeding 85 % from the original thickness
- Repaint and stamp new inspection date in stainless steel ring.
- Measuring crosshead bearing clearance comparing with OEM tolerance

4.5.38.3. Full Inspection (5 years)

- Disassemble the valve, check and clean internal and external components
- Visually check all parts for damage, cracks, corrosion and wear (especially on valve body and seat).
- Replace parts as required.
- Visually check the inlet and outlet piping for signs of deposits.
- Check the reset provision and function test of reset mechanism several times.
- Test the relief valve to ensure that it relieves at the set pressure stated using a certified monitoring gauge.
- The test shall include a minimum of 3 different pressures spanning the full range of the relief valve (including zero setting)
- The pressure relief valve manufacturer portable test kit with a proper test gauge (1/4 % full scale accuracy) and adapter flange is recommended to be used
- Adjust the pressure setting scale as required using manufacturer's recommendations.
- Repaint and stamp new inspection date in stainless steel ring.
- Grease valve and flanges (if applicable) and reinstall relief valve on the high pressure pump manifold. Set the required relief pressure.
- All Mechanical parts must be included on both inspection plan and PMS according to the OEM recommendations
- An NDT inspection the main crankshaft. K.

4.5.39. Drill pipe

4.5.39.1. Full Inspection

Vertical wells (every 50,000 ft. Or 6 months, whichever occurs first)

- Perform a dimensional inspection on the tool joints including but not limited to
  - Box OD
  - Pin ID
  - Box shoulder width
  - Tong Space
  - Box and pin thread profiles for pin stretch or box swell checks
  - Box depth – Pin length –Pin nose diameter (for the proprietary connections)
- Visually inspect the connections for pitting, corrosion, cracks, refacing and box hard banding
- Condition (No refacing for the double shoulder connections to be done without benchmarking or in field).
- Visually inspect the secondary shoulder area condition (for the proprietary connections).
- Visually inspect the threads (roots, flanks) for any pitting, corrosion, galling, crack or damage.

Pipe body

- Visually inspect the pipe tube for pitting, excessive corrosion, cuts and straightness.
- Check OD of the pipe tube and compare it with the minimum standard requirements.
- UT the wall thickness of the pipe body (at the center of the tube and all defected area).

- Full body EMI log (buggy) checking for cracks and discontinuities.
- Check the condition of the internal plastic coating and classify it as per DS 1; condition 1 to 4
- (Condition 4 is a cause of rejection).
- Mark pipes with the required API color code.
- Hard stamp each pipe on the pin 18deg taper, with the qualified inspector's name and date.

Full Inspection

Deviated and horizontal wells (every 50,000 ft. Or 6 months, whichever occurs first)

Tool Joint

- Perform a dimensional inspection on the tool joints including but not limited to
  - Box OD
  - Pin ID
  - Box shoulder width
  - Tong Space
  - Box and pin thread profiles for pin stretch or box swell checks
  - Box counter bore depth
  - Box counter bore diameter
  - Bevel diameter
  - Box depth – Pin length –Pin nose diameter (for the proprietary connections)
- Visually inspect the connections for pitting, corrosion, cracks, refacing and box hard banding
- Condition (No refacing for the double shoulder connections to be done without benchmarking or in field).
- Visually inspect the secondary shoulder area condition (for the proprietary connections).
- Visually inspect the threads (roots, flanks) for any pitting, corrosion, galling, crack or damage.
- Perform a black light inspection on the pin and box areas for transversal cracks and heat checking.

Pipe body

- Visually inspect the pipe tube for pitting, excessive corrosion, cuts and straightness.
- Check OD of the pipe tube and compare it with the minimum standard requirements.
- UT the wall thickness of the pipe body (at the center of the tube and all defected area).
- Full body EMI log (buggy) checking for cracks and discontinuities.
- Perform MPI on the slip/upset area covering at least (36″ from the pin shoulder and 48″ from the box shoulder).
- Check the condition of the internal plastic coating and classify it as per DS 1; condition 1 to 4
- (Condition 4 is a cause of rejection).
- Mark pipes with the required API color code.
- Hard stamp each pipe on the pin 18deg taper, with the qualified inspector's name and date.

4.5.40. Drill string accessories & BHA

4.5.40.1. Full Inspection (every 500 rotating hours)

Connections

- Perform a dimensional inspection on the tool joints, including but not limited to
  - Box OD
  - Pin ID
  - Box shoulder width
  - Tong Space
  - Box and pin thread profiles for pin stretch or box swell checks
  - Box counter bore depth
  - Box counter bore diameter
  - Bevel diameter

- Pin stress relief groove
- Boreback
- Shoulder flatness
- Box depth – Pin length – Pin nose diameter (for the proprietary connections)

- Visually inspect the connections for pitting, corrosion, cracks, refacing and box hardbanding
- Condition (No refacing for the double shoulder connections done without benchmarking or in field).
- Visually inspect the secondary shoulder area condition (for the proprietary connections).
- Visually inspect the threads (roots, flanks) for any pitting, corrosion, galling, crack or damage.
- Perform a black light inspection on the pin and box areas for transversal cracks and heat checking.

Body

- Visually inspect the body for pitting, excessive corrosion, cuts and straightness.
- Check the HWDP center upset OD (If applicable).
- Check the drill collar elevator and slip grooves (If applicable).
- Check the subs length (shoulder to shoulder) and compare them with the minimum standard requirements.
- Perform an MPI on the subs outside diameter.
- Mark the individual items according to the given color code.
- Grease the equipment and install thread protectors
- Prepare and submit the inspection report.

4.5.41. Raising line / bridle line/ sub-structure raising lines

4.5.41.1. Full Inspection – Cat IV (10 cycles or 2 years – whichever occurs earlier)

- Remove the raising lines from the mast/substructure and store them carefully on a wooden palette or reel.
- Visually check the end connections (Splatter, shackles, pins etc.) For any damage, corrosion or cracks.
- Visually check the raising line and Splatter sockets for any damage, kinks, corrosion and broken individual wires and strands. For the type and allowable amount of broken individual wires and kinks and wear refer BMS 06-55-STD 'Care and Inspection of Wire Rope Raising Lines'.
- Preform MPI on the end connections (including pins and shackles etc.) And splitter sockets.
- Preserve with heavy oil and store on reel or wooden pallet.

4.5.42. Slings, shackles & pad eyes

4.5.42.1. Full Inspection (every six months)

- Identify (together with the STP or Worksite Supervisor in charge) all pad eyes, slings, lifting devices, spreaders, sheaves and shackles that are due for inspection.
- Make sure that all items are registered and marked with individual identification numbers as per the worksite lifting gear register.
- Visually check all items for damage, cracks, corrosion or wear.
- Visually inspect all lifting slings for kinks, broken strands and wires.
- Visually inspect all shackles for crack, twist, bending, excessive opening, pin and nut condition, holes, diameters, holes alignment.
- To identify possible fractures if considered suspect; carry out NDT (liquid penetrant is preferable) on pad eyes welds.
- Check pad eye width and hole diameter for compatibility with the appropriate shackle
- Mark all slings, pad eyes and shackles according to the dedicated color code system.
- Grease and lubricate as required.

4.5.43. King pins

4.5.43.1. Full Inspection (6 month) By a Qualified Inspector

- Visually check the king pin, fifth wheel and mounting frame and bolts for any damage, cracks, corrosion or wear.
- Measure dimensions of king pin and compare with the specified wear tolerances from the manufacturer.
- Perform NDT required inspection on the king pin (retention plate and skid plate welding), fifth wheel and related mounting brackets.
- Grease the items as required.

4.5.44. Personnel baskets

4.5.44.1. Field Inspection (every six months) By a Qualified Inspector

- Visually check the basket (including railing and floor plate) for any damage, corrosion or cracks.
- Remove the paint from the critical welded areas (main frame, floor plate and bottom part of railing etc.).
- Perform NDT on all the critical welds.
- Perform NDT on the lifting eye and lifting sling (if applicable).
- Repaint as required.
- Prepare and submit the inspection report.

4.5.44.2. Full Inspection (every four years) By a Qualified Inspector

- Complete the full every six months' inspection in addition to the following:
- Fully sandblast the personnel basket.
- Perform wall thickness measurement of the basket frame and floor plate and fixing points of the railing (minimum three points per meter).
- Repaint all of the components.
- Prepare and submit the inspection report.

4.5.45. Personnel elevators "If installed"

4.5.45.1. Field Inspection (every six months) By a Qualified Inspector:

- Visually check the basket (including railing and floor plate) for any damage, corrosion or cracks.
- Remove the paint from the critical welded areas (main frame, floor plate and bottom part of railing etc.).
- Perform NDT on all the critical welds.
- Perform NDT on all elevator to sub base attachment points.
- Perform NDT on the lifting eyes and lifting device attachment point.
- Repaint as required.
- Prepare and submit the inspection report.

4.5.45.2. Full Inspection (every four years) By a Qualified Inspector

- Complete the full every six months inspection in addition to the following:
- Fully sandblast the personnel elevator basket.
- Perform wall thickness measurement of the basket frame and floor plate and fixing points of the railing
- (Minimum three points per meter).
- Repaint all of the components.
- Prepare and submit the inspection report.

4.5.46. Self-propelled man lifts

4.5.46.1. Field Inspection (every six months) By a Qualified Inspector

- Visually check the basket (including railing and floor plate) for any damage, corrosion or cracks.
- Remove the paint from the critical welded areas (main frame, floor plate and bottom part of railing etc.).
- Perform NDT on all the critical welds.
- Perform NDT on the pad eyes and all lifting cylinders' attachment points.
- Repaint as required.

4.5.46.2. Full Inspection (every four years) By a Qualified Inspector

- Complete the full every six months inspection in addition to the following:
- Fully sandblast the self-propelled manlift basket.
- Perform wall thickness measurement of the basket frame and floor plate and fixing points of the railing (minimum three points per meter).
- Repaint all of the components.

4.5.47. Crane hooks

4.5.47.1. Full Inspection (every year) By a Qualified Inspector

- Sling out the lifting block / hook.
- Visually check the block / hook for any damage, corrosion or wear.
- Check that hook swivel assembly is rotating freely.
- Visually check the block sheaves depth (using a sheave groove gage) and the sheave bearing clearance using pry bar. If loose, need to identify the cause and replace the bearing, if needed.
- Check the hook for any excessive bending, twisting, wear or throat opening and compare it with the OEM recommendations.
- Perform NDT on the hook, hook pin, load bearing areas and outside plates of the block.
- If found any initiation of cracks in the load bearing areas, MPI is recommended to verify the crack condition.
- If MPI show cracks, complete disassembly and extensive MPI should be carried out.
- Repaint all of the components.

4.5.48. Forklift forks and fork support

4.5.48.1. Full Inspection – Cat IV (every one year)

- Disassemble the support frame from the forklift as much as possible.
- Visually check the forks and support for any damage, bends, corrosion or wear.
- Measure the angle of the forks. The fork should be withdrawn from the service if the deviation was 3 degrees greater or less of 90o (or as per the OEM recommendations) between the blade and the shank.
- Perform MPI on the fork arm, forks (critical areas) and attachments/brackets of the forklift support. Special attention shall be paid to the heel and the top and bottom hooks including their attachment to the shank.
- Thoroughly measure the wear on fork arm blade and shank; if the thickness of the blade or shank is reduced to 90 % of the original thickness, or to the minimum thickness specified by OEM, the fork arm shall be withdrawn from service. A set of fork arms shall be checked for any difference in height when mounted on the fork carrier. If the difference in tip heights exceeds 3 % of the blade length or that recommended by OEM, the set of fork arms shall be withdrawn from service.
- Check the safety chain between forks and fork support (if applicable) for damage or wear.
- Check the bore of the shaft/pin type forks. Wear limit should not be more than 10 % of the

original bore or as per OEM recommendations.
- Check for loose items (bolts, pins etc.)
- Check the hydraulic lifting components for any damage or leakage.
- Repaint as required.

4.5.49. Air pressure vessel

4.5.49.1. Field Inspection CAT III (every one year) – by a Qualified Inspector

- Release the pressure from the vessel and disconnect all lines, valves and gauges etc.
- Open the inspection hole of the vessel.
- Visually check the vessel for any damage, corrosion or wear.
- Visually check all nozzles and associated piping/fittings for any visible defects.
- Measure and document the wall thickness of the vessel body (minimum 6 points per square meter), paying particular attention to areas where water can gather.
- Perform MPI on critical weld joints (connections and nozzles)
- Check the condition and content of the manufacturer's name plate.
- Where deemed necessary by the inspector, a pressure test may be required.
- Ensure that the SWP is clearly visible on the external of the vessel.

4.5.49.2. Full Inspection CAT IV (every five years) – by a Qualified Inspector

- Release the pressure from the vessel and disconnect all lines, valves and gauges etc.
- Open the inspection hole of the vessel.
- Visually check the vessel for any damage, corrosion or wear.
- Visually check all nozzles and associated piping/fittings for any visible defects.
- Measure and document the wall thickness of the vessel body (minimum 6 points per square meter), paying particular attention to areas where water can gather.
- Perform MPI on critical weld joints (connections and nozzles)
- Check the condition and content of the manufacturer's name plate.
- Prepare and submit the inspection report which is to include determination of corrosion rate where previous readings are available.
- Where deemed necessary by the inspector, a pressure test may be required.
- The test medium should be water and special consideration should be given to the supporting structure and foundation design.
- Ensure that the SWP is clearly visible on the external of the vessel.
- In addition to all other OEM inspection requirements and international applicable standards

4.5.50. Air pressure relief valves

4.5.50.1. Field Inspection (every One year)- by a Qualified Inspector

- Release the pressure from the vessel.
- Remove the air pressure relief valve.
- Visually check the relief valve for any damage, corrosion or wear.
- Visually check the inlet and outlet piping for signs of deposits
- Calibration shall be conducted through approved third party
- Test the relief valve to ensure that it relieves at the set pressure stated using a certified monitoring gauge.

4.5.50.2. Full Inspection (every five years)- by a Qualified Inspector

- Release the pressure from the vessel.
- Remove the air pressure relief valve.
- Visually check the relief valve for any damage, corrosion or wear.
- Visually check the inlet and outlet piping for signs of deposits.
- Test the relief valve to ensure that it relieves at the set pressure stated using a certified

monitoring gauge.
- Repaint and stamp new inspection date in stainless steel ring.
- Check the condition and content of the manufacturer's name plate.

4.5.51. Fuel storage tanks

4.5.51.1. Field Inspection (every year) by a Qualified Inspector)

- Visually check the tank for any damage, corrosion or cracks.
- NDT –UT inspection shall be conducted
- Record the wall thickness of the tank (minimum 2 points per square meter) including the pedestals and skid.
- Wall thickness measurements shall be compared with the original thickness to decide the condition of tank serviceability

4.5.51.2. Full Inspection (every Five years)- by a Qualified Inspector

- Empty the fuel tank completely and flush inside with water based cleaner.
- Sand or grit blast the tank outside.
- Visually check the tank for any damage, corrosion or cracks.
- Measure and record the wall thickness of the tank (minimum 2 points per square meter) including the pedestals and skid.
- Preparing for Confined Space Entry Rules
- Open the tank man hole and inspect the tank inside for any corrosion or cracks.
- Perform NDT on all critical areas (welded seams, pedestal and skid front ends etc.)
- Check condition and content of the manufacturer's name plate.
- Repaint all of the components.

4.5.52. Bop lifting devices

4.5.52.1. Field Inspection – Cat III (every one year)

- Remove the BOP hoisting device from the traveling beams.
- Dismantle the hoisting device as much as needed.
- Visually check all items for any damage, wear, corrosion or cracks.
- Measure and record the wall thickness of the traveling beams (in the "working area").
- Perform MPI on the hook, traveling beam connections and sheaves (if applicable).
- Check the condition and content of the manufacturer's name plate.
- Repaint the items as required (including the SWL sign).

4.5.52.2. Full Inspection – Cat IV (every four years)

- Complete the full every one-year inspection in addition to the following:
- Completely disassemble of the hoisting device.
- Visually inspect and measure the main hoist (or hydraulic cylinder) components.
- Compare the measurements with maximum allowable tolerances from the manufacturer.
- Reinstall the unit and conduct performance test to maximum load.
- Repaint all of the components.
- Follow OEM requirements and applicable international standards

4.5.53. F. Arrestors & escape devices

4.5.53.1. Field Inspection (every six months) By a Qualified Inspector

- Remove the arrestor or escape device from the working position.
- Visually check the device for any damage, corrosion, wear or cracks.
- Visually check the wire line for any cuts, kinks, corrosion or broken wire.
- Check that the "Pull line "can be pulled out and retracts fully.

- Perform NDT on the welds, the mounting brackets and any shackle or swivel.
- Check the condition and content of the manufacturer's name plate.
- Repaint the items as required.
- Prepare and submit the inspection report.

4.5.53.2. Full Inspection (every four years) By a Qualified Inspector

- Complete the full every six months inspection in addition to the following:
- Completely disassemble the arrestor and inspect, measure and record the wear of the critical components
- As per manufacturer's manual.
- Compare measurements with maximum allowable tolerances.
- Repaint all of the components.
- Prepare and submit the inspection report.

4.5.54. EX(D) and EX(E) systems

This is an optional inspection procedure

4.5.54.1. "Close/Visual" Inspection (3 years)

- Review the rigs hazardous area layout drawings. If the drawings are inaccurate or missing, note deficiency on the report and notify the Technical Operations group.
- Verify all electrical equipment and their connection system installed in Zone 1 or Zone 2 areas are rated for the area they are located.
- Inspect the equipment ensuring junction boxes, glands, cables, etc are in good condition and that all bolts are fitted.
- Update the rig Ex register and any deficiencies are reported and acted upon, these are also to be added to The rig ICR.

In case of any major deficiencies detected during the Close/visual inspection

A "detailed" Inspection shall be implemented by a qualified compex inspector:

- Review the rigs hazardous area layout drawings. If the drawings are inaccurate or missing note deficiency on the report and notify the Technical Operations group.
- Verify all electrical equipment and their connection system installed in Zone 1 or Zone 2 areas are rated for the area they are located.
- Inspect and verify the installation of the air ventilation systems in the drillers control, instrument panels and the air cooling systems of the DC motors for the Draw works, top drive system and rotary table (if applicable).
- Open all enclosures and ensure terminations are correct.
- Update the rig Ex register and any deficiencies are reported and acted upon, these are also to be added to the rig ICR.

4.5.55. Rig instrumentation

4.5.55.1. Main Principles

- Critical rig instrumentation including gauges, torque wrenches, electric meters will be calibrated by a competent person in accordance with this standard. For details on critical rig instruments
- Gauges that are not classified as critical will also require calibration by a competent person in accordance with this applicable standard and EGPC requirements standard
- All calibrated instrument, gauges etc. Are to be tagged with 'Date Calibrated' and 'Next Calibration Due' tags by the qualified inspector.
- The calibration details of calibrated instrument and gauges will be provided by the qualified inspector to rig STP.

- Ensure all instruments are thoroughly cleaned prior to commencing any inspection.
- The calibration details will be entered by Rig Management into the Critical Instrumentation
- Calibration Log available will be maintained up to date.

4.5.55.2. Full Inspection of critical instruments (every 6 months) By a Qualified Inspector

- Visually check the instruments for any damage, corrosion or leaks.
- Check condition and content of the OEM's name plates for necessary information
- Visually check the installation of the instruments for proper mounting of brackets, piping, hoses, fittings etc.
- Inspect service and carry out function tests of the instruments as per OEM's instructions.
- Recalibrate in accordance with OEM's requirements and apply calibration tag.
- Mark the instruments with new/updated inspection signs/ stickers.

4.5.55.3. Inspection of non-critical gauges (every 1 yearly) By a Qualified Inspector

- Visually check the gauge for any damage, corrosion or leaks.
- Check condition and content of the OEM's name plates for necessary information
- Visually check the installation of the instruments for proper mounting of brackets, piping, hoses, fittings etc.
- Inspect service and carry out function tests of the instruments as per OEM's instructions.
- Recalibrate in accordance with OEM's requirements and apply calibration tag.
- Mark the instruments with new/updated inspection signs/ stickers.
- Prepare and submit the inspection report.

4.5.56. Rig instrumentation

4.5.56.1. Main Principles

- Critical rig instrumentation including gauges, torque wrenches, electric meters will be calibrated by a competent person in accordance with this standard. For details on critical rig instruments,
- Gauges that are not classified as critical will also require calibration by a competent person in accordance with this standard.
- All calibrated instrument, gauges etc. Are to be tagged with 'Date Calibrated' and 'Next Calibration Due' tags by the qualified inspector.
- The calibration details of calibrated instrument and gauges will be provided by the qualified inspector to
- Ensure all instruments are thoroughly cleaned prior to commencing any inspection.
- The calibration details will be entered by Rig Management into the Critical Instrumentation Calibration Log available in
- Log Must be maintained up to date.

4.5.56.2. Full Inspection of critical instruments (every 3 months) By a Qualified Inspector

- Visually check the instruments for any damage, corrosion or leaks.
- Check condition and content of the OEM's name plates for necessary information
- Visually check the installation of the instruments for proper mounting of brackets, piping, hoses, fittings etc.
- Inspect service and carry out function tests of the instruments as per OEM's instructions.
- Recalibrate in accordance with OEM's requirements and apply calibration tag.
- Mark the instruments with new/updated inspection signs/ stickers.
- Prepare and submit the inspection report.
- Inspection of non-critical gauges (every 1 yearly) By a Qualified Inspector:
- Visually check the gauge for any damage, corrosion or leaks.
- Check condition and content of the OEM's name plates for necessary information
- Visually check the installation of the instruments for proper mounting of brackets, piping,

hoses, fittings etc.
- Inspect service and carry out function tests of the instruments as per OEM's instructions.
- Recalibrate in accordance with OEM's requirements and apply calibration tag.
- Mark the instruments with new/updated inspection signs/ stickers.

4.5.56.3. Inspection of non-critical gauges (every 1 yearly) By a Qualified Inspector

- Visually check the gauge for any damage, corrosion or leaks.
- Check condition and content of the OEM's name plates for necessary information
- Visually check the installation of the instruments for proper mounting of brackets, piping, hoses, fittings etc.
- Inspect service and carry out function tests of the instruments as per OEM's instructions.
- Recalibrate in accordance with OEM's requirements and apply calibration tag.
- Mark the instruments with new/updated inspection signs/ stickers.
- Prepare and submit the inspection report.

4.5.57. Breathing air cylinders (fiberglass/steel)

4.5.57.1. Field Inspection for (every one year) By a Qualified Inspector

- Visual check all cylinders' components
- Replace breathing Air by removing and recharge it again with new breathable air
- Purity Air compressors must used
- Purity certificate must be provided through the third party "if recharged through third party "
- Stamp new expiry date on the cylinders.

4.5.57.2. Full Inspection for (every three years) By a Qualified Inspector:

- Remove the cylinders from service.
- Perform complete hydro-test as per manufacturer's specifications.
- Stamp new expiry date on the cylinders.

4.5.57.3. Full Inspection for Steel Cylinders (every five years) By a Qualified Inspector

- Remove the cylinders from service.
- Perform complete hydro-test as per manufacturer's specifications.
- Stamp new expiry date on the cylinders.

Note: The SCBA cylinder testing company / inspectors shall have their own individually licensed copies of the relevant CGA (Compressed Gas Association) documents needed to carry out the cylinder inspections that the testing company offers.

4.5.58. IBOP, Kelly valves & safety valves

4.5.58.1. Field Inspection (every six months)- by a Qualified Inspector

- Remove the valve from service.
- Fully open the valve and pump a small volume of fresh water through the valve to remove drilling mud residue from the ID bore of the valve.
- Fully close the valve and disassemble the valve completely.
- Visually Inspect threads for damage, stretching and galling.
- Visually inspect valve bore, seat bores, and stem bores for internal scratches or excessive wear.
- Perform NDT (PT with fluorescent penetrants) on the following:
- Box / pin thread area
- Area inside the operating crank window.
- Fillet radii of internal grooves and shoulders.
- Change all the valve seat seals, Teflon rings and stem/crank O-ring.
- Reassemble the valve and fill with high grade lithium based grease.

4.5.58.2. Full Inspection (every five years)- by a Qualified Inspector

- Complete the full six-month inspection in addition to the following:
- Replace the whole valve seats and ball assembly.
- With the valve in the closed position conduct a pressure test according to OEM procedures and records the results.
- Low Pressure test from 250 to 350 PSI for 5 minutes.
- High pressure test to the rated cold working pressure for 5 minutes

4.5.59. Mud gas separator “POORBOY “

4.5.59.1. Field Inspection- Cat III Semi- Annual / Annually)

- Perform the three Months Preventive maintenance
- Perform NDT –MPI on all the MGS body, inlet lines, return lines, vent lines and piping clamps/ brackets welding.
- Perform NDT wall thickness measurement on all the MGS body and compare it with the minimum recommended thickness provide by OEM / International applicable standards .

4.5.59.2. Full Inspection- Cat IV (Every Five Years)

- Perform the three Months Preventive maintenance
- Open the Mud gas separator Manway.
- Verify the condition of the inner surface of the Mud Gas Separator for any signs of cracks or excessive corrosion.
- Verify the baffles/slotted pipe condition for any damage.
- Perform MPI on all the MGS body, inlet lines, return lines, vent lines and piping clamps/ brackets welding.
- Perform wall thickness measurement on all the MGS body and compare it with the minimum recommended thickness.

4.5.60. Iron roughneck

4.5.60.1. Full Inspection CAT III (Six Month)

- Visually inspect all fasteners for damage or corrosion.
- Visually inspect all pins/holes (bearing movement areas) for excessive wear.
- NDT VT/MPI inspection for all of the hanging points, lifting eyes, shackles and guide handle for excessive wear, damage or deformation.
- Visually inspect all hydraulic/pneumatic hoses for damage, kinks, cuts reaching the internal wire layer of the hoses and replace if necessary.
- Check the operating mechanism
- Follow OEM inspection procedures or international applicable standards

4.5.60.2. Full Inspection (every One year)

- Fully disassemble the Iron Roughneck.
- Check the slew and roller bearings condition.
- Visually inspect all fasteners for damage or corrosion.
- Visually inspect all pins/holes (bearing movement areas) for excessive wear.
- Visually inspect all of the hanging points, lifting eyes, shackles and guide handle for excessive wear, damage or deformation.
- Extend the lifting cylinder and visually inspect the chrome surface for any pitting or excessive wear condition.
- Extend all of the clamping and wrenching cylinders consecutively and visually inspect the chrome surface for any pitting or excessive wear; check the attachment points and eyes for wear and excessive tolerance.
- Visually inspect the biting edges of the jaw assemblies and their retaining bolts for any

looseness or damage.
- Check the spinning rollers diameter for excessive wear (Make the measurement from the center of the rollers away from the edges as much as possible)
- Perform an MPI (PT for narrow areas) for all the accessible weld and critical areas including the power scope adapter assembly (if installed).
- Visually inspect all hydraulic/pneumatic hoses for damage, kinks, cuts reaching the internal wire layer of the hoses and replace if necessary.
- Reassemble and paint the Iron Roughneck.
- Follow OEM inspection procedures or international applicable standards

4.5.61. Pipe arms & pipe loaders

4.5.61.1. Field Inspection (every one year)

- Visually inspect all the unit fasteners and fittings for tightness, damage or corrosion.
- Visually inspect all the pins/holes (bearing movement areas), pivot connections and control mechanisms for excessive wear.
- Visually inspect the tubular loading system including the pipe support, ejector mechanism, transfer arms, pipe stoppers and tilting pistons for any damage, deformation or excessive wear.
- Visually inspect the entire arm major components including pipe supports, clamps, jaws, funnels, top spring and supporting beams for any damage, deformation or excessive wear.
- Extend all cylinders (main lifting and auxiliary) and visually inspect the chrome surface for any pitting excessive wear condition including.
- Visually inspect all the accessible weld and critical area members in the pipe arm and loading system structure, frames, bracing & hydraulic system
- Visually inspect all hydraulic hoses for damage, kinks, cuts reaching the internal wire layer of the hoses replace if necessary.
- Visually check the condition electrical cables, plugs and junction boxes mounted on the unit.

4.5.61.2. Full Inspection (every three years)

- Perform all the field inspection procedures.
- Perform an MPI (PT for narrow areas) for all the accessible weld and critical area members in the pipe arm and loading system structure, frames, bracing & hydraulic system

4.5.62. Spinning wrench

4.5.62.1. Full Inspection (every Six month)

- Visually inspect all the unit fasteners for tightness, damage or corrosion.
- Visually inspect all the pins/holes (bearing movement areas) for excessive wear.
- Visually inspect all the hanging points, lifting eyes, shackles and adjustment bolts for excessive wear, damage or deformation.
- Extend lifting cylinder and visually inspect the chrome surface for any pitting or excessive wear condition.
- Visually inspect the snub line attachments, brackets, shackles and pins for excessive wear, damage or deformation.
- Extend the clamping cylinder and visually inspect the chrome surface for any pitting or excessive wear;
- Check the attachment points and eyes for wear and excessive tolerance.
- Remove the drive motor (If applicable); clean muffler and check the drive and gear case pinion gears condition.
- Check the spinning rollers diameter for excessive wear (Make the measurement from the center of the rollers away from the edges as much as possible)
- Perform an NDT –MPI/PT for narrow areas) for all the accessible weld and critical areas including the power scope adapter assembly (if installed).

- Visually inspect all hydraulic/pneumatic hoses for damage, kinks, cuts reaching the internal wire layer of the hoses and replace if necessary.

4.6. Overhauling requirements

4.6.1. Rig main diesel engines

4.6.1.1. Needs for Overhauls – Condition Based Criteria

- Monthly safety and preventive maintenance results, indicating the need of the top end or major overhauls.
- Increase in the oil consumption. Three times the original oil consumption rate due to normal wear with an increase in the crankcase blow by exceeding the OEM limits.
- Total amount of fuel consumption reaching the maximum limits highlighted by the OEM.
- The results of wear metal analysis of the lube oil (oil sampling).
- An increase in the level of noise or vibration.
- If the service hours are reached the maximum frequencies mentioned in rig operators PM Engine schedule, from last overhaul or from the date of purchase.

4.6.1.2. Top End Overhaul Requirements - By OEM or Qualified Workshop/Facility

- A complete top end overhaul should be performed as per the OEM instructions.
- After the re-assembly, while the engine is stopped; Conduct a solenoid test and wiggle (wiring integrity) test.
- After the re-assembly, while the engine is running; perform a multi cylinder cutout test and record theTest results.
- Check all the safety shutdown settings and record them (test them if applicable).
- Submit the final service report and overhauling records.

4.6.1.3. Major/"Zero Hours" Overhaul Requirements - By OEM or Qualified Workshop/Facility

- A major/"Zero hours" overhaul will be performed as per the OEM instructions.
- After the re-assembly, while the engine is stopped; Conduct a solenoid test and wiggle (wiring integrity) test.
- After the re-assembly, while the engine is running; perform a multi cylinder cutout test and record the test results.
- Check all the safety shutdown settings and record them (test them if applicable).
- Perform load testing sequence and record all the required readings based on the PM system requirements

D5. Requirements For HSE Case

EGPC

5.1. Scope

This procedure will be applied to all rig contractors working under Egyptian petroleum sector affiliated companies

5.2. Purpose

To demonstrate:

- that there is a systematic approach to HSE management in place, which is designed to provide for continuous improvement in HSE performance for the Well Engineering Operations;
- compliance with all applicable HSE legislation and standards, the EGPC policies and Drilling and Workover HSE guidelines where applicable
- that there are physical and operational controls in place for all hazards that commensurate with the level of risk;
- that safety risks have been reduced to tolerable levels as defined by rig contractor's criteria;
- That measures are in place to reduce the HSE risks to as Low as Reasonably Practicable (ALARP) and appropriate recovery preparedness control measures are in place in the event of a realized incident.

5.3. Responsibilities

It is the responsibility of Rig operator's/Rig contractor's management and work site supervisors to ensure that this standard is followed

5.3.1. EGPC/EGAS Drilling and workover /HSE Dept.

- Ensure that all requirements mentioned in in this section of EGPC guidelines are carefully implemented through predetermined audit and inspection plan
- Assign a special committee from its affiliated companies for performing rigs Auditing and updating this guideline
- Nominate of drilling and HSE members to participate in HSE case reviewing and approval committee from EGPC or other affiliated companies as applicable

5.3.2. Rig Operator's chairman of the board and General Manager

- Ensure that all requirements mentioned in this guidelines are carefully implemented and support the implementation of all HSE policies

5.3.3. Rig Operator's Operations General Manager

- Ensure that all requirements mentioned in this guidelines are carefully implemented through predetermined acceptance audit and inspection and rig acceptance criteria
- Ensure that HSE case is implemented within each Drilling unit working under his responsibilities

5.3.4. Rig Operator's Drilling General Manager

- Ensure that all requirements mentioned in this guidelines are carefully implemented through supporting the implementation of periodical audit and inspection plan and rig acceptance criteria
- Nominate of the drilling member for the HSE case reviewing and approvals committee
- Ensure that HSE case is implemented within each Drilling unit working under his responsibilities
- Review HSE case results and recommendations with HSE manager and Rig contractor Operations and HSE management team

5.3.5. Rig Operator's HSE General Manager

- Ensure that all requirements mentioned in in this guidelines are carefully implemented
- Prepare a plan to Perform HSE audit/ Inspection/ Walkthrough..etc.
- Follow up the daily HSE activities using his Company checklist which established based on

EGPC Drilling and workover guideline
- ensure that the acceptance audit performed by EGPC approved third party is performed and all critical and major items are closed
- nominate the drilling member for the HSE case reviewing and approvals committee Responsible for reviewing HSE case results and recommendations with Drilling manager and Rig Contractor Operations and HSE management team

5.3.6. Rig Contractors' Operations General Manager

- Approve the specific training requirements plan including all required training mentioned on this section of EGPC drilling and workover HSE guideline
- formulate the HSE case committee based on the committee structure mentioned in this section
- Ensure that the Training Plan are implemented through his respective Drilling and workover operations managers and rig contractor's administration department
- Issue Clear instructions and commitments to all company affiliated rigs to comply with EGPC HSE guidelines
- Provide Financial and administrative support to comply with EGPC drilling and workover manual
- Ensure that HSE case is implemented within each Drilling unit working under his responsibilities

5.3.7. Rig Contractor's Drilling and workover operations managers

- Follow up the implementation of EGPC HSE Case requirements with his respective Drilling and workover Superintendents
- Ensure that HSE case is implemented within each Drilling unit working under his responsibilities
- provide Financial and administrative support to comply with EGPC drilling and workover manual

5.3.8. Rig Contractor's Drilling Superintendents

- Follow up the implementation of EGPC HSE Case requirements with his respective Drilling and workover Superintendents
- Ensure that HSE case is implemented within each Drilling unit working under his responsibilities
- The Nomination of Operations member in the HSE case committee
- Join the committee and provide technical support whenever needed
- To provide Financial and administrative support to comply with EGPC drilling and workover manual

5.3.9. Rig Contractor's Maintenance and Assets Integrity Manager

- follow up the implementation of EGPC HSE Case requirements with his respective Drilling and workover Superintendents
- the Nomination of the maintenance team members in the HSE case committee
- provide technical support whenever needed
- provide Financial and administrative support to comply with EGPC drilling and workover manual

5.3.10. Rig Contractor's Maintenance Superintendent

- Follow up the implementation of EGPC HSE Case requirements within the Drilling and workover rigs under his responsibility
- Participate in the HSE case workshops and provide technical support whenever needed

5.3.11. Rig Contractor's Senior Tool pusher

- Follow up the implementation of EGPC HSE Case requirements within the Drilling and workover rigs under his responsibility
- participate in the HSE case workshops and provide technical support whenever needed

- Implementing all plans and control measure as per mentioned in the approved HSE case including "operations, maintenance and HSE in addition to third parties' activities

5.3.12. Rig Contractor's site HSE

- Follow up the implementation of EGPC HSE Case requirements within his workplace
- Participate in the HSE case workshops and provide HSE support whenever needed
- Implementing all HSE plans and control measure as per mentioned in the approved HSE case including activities

5.4. Requirements

5.4.1. Preparation and issuing Formal HSE Case Assessment Report (FHSECAR)

All Rig Contractors are requested to conduct a Formal HSE Case Assessment Report (FHSECAR) of their rigs" all types including all capacities". This Formal HSE Case Assessment Report (FHSECAR) is expected to contain information on major accident hazards (MAHs) and show that all practicable controls have been identified to ensure that risk is reduced ALARP.

The Formal HSE Case Assessment Report (FHSECAR) process must include the identification of all potential risks and appropriate control measures adopted for each specific risk.

The contractor management shall create a Formal HSE Case Assessment Report (FHSECAR) Team which consists of rig contractors multidiscipline team as follow as a minimum

- Maintenance team Member;
- Inspection team Member;
- Instrumentation team Member;
- HSE team Member;
- Projects team Member
- and other subject matter experts as applicable.

5.4.2. Required training for the HSE Case Committee

- Rig contractor is responsible to provide a professional Training ,that will make all HSE case team be competent enough to perform their responsibilities toward preparing the HSE case as required by EGPC and in the applicable Industry Codes and Standards which depend on identify safety critical elements (SCEs) associated with major accident hazards (MAHs), therefore all HSE case member shall successfully pass the following training
- HSE case training program
- Process safety management "PSM" program
- Risk management program
- Rig inspection training program

5.4.3. Submission of Safety Case

Submission and approval of a HSE Case is a mandatory requirement for all Rig contractors to be operated, currently operating or to be decommissioned in the oil and gas industry in Egypt

All Rig contractors must comply with EGPC regulations, guidelines, standards and other systems described in the HSE Case. This means that every rig in Egypt must have a HSE Case, and imposes a responsibility of all rig contractors to develop, submit, and secure approval of the same for each relevant facility.

Each HSE Case is to be submitted to EGPC/Egas/Ganop and rig operator's operations and HSE departments at specific stipulated periods and under specific conditions, and any deviation from the conditions will invalidate the Safety Case approvals. For instance, the HSE case report shall be submitted within 30 Days of receiving awarding later through the rig contractors .

5.4.4. Review of a Safety Case

When the HSE Case has been submitted to the concerned Holding company and Rig operator, there may be a need for a joint review/ workshop which will enable the contractor to present, demonstrate and justify the adequacy of the safety provisions in the facility to the EGPC /Egas/ Ganob and rig operators or on any other grey areas as may be necessary. This joint review aims to assure the EGPC/EGAS /GANOB that the HSE Case dossier satisfies all the required expectations. The joint review team will be made up of

- EGPC/ Egas / Ganob representatives,
- Rig Operators operations personnel,
- Rig Operators HSE Member
- Rig Contractors HSE personnel,
- Rig Contractors Project Development team
- Third-party consultant if needed

At the end of a review process, HSE case validation and verification will also be carried out. This may involves a physical visit to the rig site to confirm that installations, and operations on the facility, amongst others, are fit for purpose and consistent with Safety Management Systems,

The HSE Case must be kept up to date and revised as necessary during the facility life cycle and must reflect the operational reality of the installation.

A revised HSE Case is required to be resubmitted for approval every five years and non-compliance with this requirement may lead to summary penalties or fines to rigs owners/ rig operators or the revocation of associated leases, licenses and permits by the EGPC

5.5. HSE Case and Birding documents

The HSE Case should be prepared in tandem with the Bridging Documents of the Rig after awarding and before the first spud in . and shall include but not limited to the following :

5.5.1. Introduction

The Introduction portion of the HSE Case sets the overall tone of the document, it identifies components such as management commitment, the scope of the HSE Case and rig contractor's commitment to continuous improvement.

5.5.2. HSE Management System (MS) Summary

Rig contractors HSE philosophy and structure of the HSE Management System. In particular, the HSE Management system describe the system of identifying hazards, assessing risk to personnel, managing those hazards and the means of mitigating the consequences should those hazards be realized.

5.5.3. Rig operating systems/operations Description Summary

the essential features of the execution of Well Engineering Operations and an overview of the rig operations with a focus on the relevance to HSE and emergency response management. This part consists of the rig layout and information regarding the key equipment and systems of the rig Primary structure;

- Drilling, completion and well control equipment;
- Fire and explosion protection
- Emergency Systems
- Accommodation;
- Well testing; and
- Other Third Party Equipment.

5.5.4. Risk Management Summary

the HSE Case shall describe the Risk Management Process for assuring that the risks associated with rig contractors Scope of Operations are reduced to a level that is tolerable to rig contractor and rig operator

The Risk Management Process must consider the HSE management objectives, systems and equipment and shall be provided and managed by rig contractors or related third parity

5.5.5. Emergency Response Summary

The Emergency Response section describes the HSE Management objectives for emergency response of incidents - to mitigate the consequences of incidents and the measures to recover from incidents.

Rig contractors shall mention all the expected emergency case related to operations, equipment, weather, surrounding environment ...etc and its preparedness to control or mitigate all expected emergency cases

Section E: Occupational Health Requirements

E1. Food Service Hygiene

EGPC

1.1. Scope

The scope of food service hygiene procedures encompasses all aspects of food handling, from receiving and storing food to preparing, cooking, serving, and disposing of food waste. These procedures are designed to prevent foodborne illness by minimizing the risk of contamination from physical, chemical, and biological hazards.

1.2. Purpose

The purpose of food service hygiene procedures is to:

- Protect public health by preventing foodborne illness
- Ensure that food is safe for human consumption
- Comply with food safety regulations
- Maintain a positive reputation for the food service establishment

1.3. Definitions

1.3.1. HACCP:

It stands for the "Hazard Analysis and Critical Control Point" system. It allows you to predict potential risks to food safety and to prevent them before they happen.

1.3.2. CCP:

Critical control points (CCPs) are the points in the process where significant hazards must be controlled.

1.4. Procedure

1.4.1. Risk Management:

In line with the HACCP system, risk management normally takes place as a result of the existence of hazardous conditions of food, as the food type and cooking process have that vital effect in getting the food condition out of hygiene and quality margins (taking into consideration the nutritional components of every type of food)

The figure lists the most common prepared foods linked to illness as a result of the risk increase, so that the risk of consumer illness as a result of food poisoning while cooking process increases when going up in list as shown.

1.4.2. HACCP Core Principles:

Any food management system should comply with the HACCP system "Hazard Analysis Critical Control Point" which should be compatible with the following 7 HACCP core principles:

1.4.2.1. Identify Potential Food Safety Hazards

The first two letters in HACCP stand for "Hazard Analysis." When doing a hazard analysis, we should determine the primary potential food safety risks at each stage of the preparation process.

Each food preparation process has its own potential safety hazards, example of these practices like; cross-contamination, improper hot or cold storage and other hazards.

1.4.2.2. Determining Critical Control Points (Determine where and when to prevent problems)

CCP is a stage in food preparation process where hazards can be reduced or eliminated, and where later stages won't correct safety problems if they are not controlled at first stage. Examples of CCPs might include: cooking, reheating, hot holding stages, chilling, chilled storage, receiving, thawing, mixing ingredients, and other food handling stages.

1.4.2.3. Establishing Critical Limits. (Set limits to control potential control problems)

Once CCPs are identified, critical limits should be established, which will reduce or eliminate potential hazards, for example:

Receiving
Potentially hazardous food must be at below 40°F
Frozen foods mustn't have been thawed
There must be no evidence of spoilage, abuse, foreign objects, or contamination in foods
Cooking, Reheating, and Hot Holding
Cook poultry to at least 165°F
Cook roast beef to at least 130°F
Reheat all foods rapidly to at least 165°F
Hold all hot foods at 140°F or higher
Chilling and Chill Storage
Chill roast beef from 120°F to 55 °F in less than 6 hours, and continue to chill to 40°F
Chill all other foods from 130 °F to 80°F in 1.5 hours, and from 80°F to 40°F in 6 hours
Do not leave potentially hazardous foods at room temperature
Do not cover hot foods tightly in the cooler until chilled
Chill and store foods in shallow pans (2-3 inches deep)
Food Handling
Thoroughly wash vegetables in clean cold water
Use proper hand washing techniques
Use proper dish washing and sanitizing techniques
Cover and protect open cuts and scratches.
Handle cooked foods only with clean gloves or utensils
Use clean and sanitized equipment and utensils
Stay home when sick

1.4.2.4. Establishing a System to Control the CCP.

Methods for monitoring CCP limits may include:

- Visual observations (watching the practices of deli workers, and inspecting raw materials).
- Sensory evaluations (smelling for off-odors).
- Chemical measurements (pH or acidity, viscosity, salt content, or water activity).
- Physical measurements (time and temperature).

1.4.2.5. Establishing the Corrective Actions.

To be taken when monitoring indicates that a particular CCP is not under control. Examples of Corrective Actionss might include:

- Adjust a cooler's thermostat to get the proper temperature
- Extending cooking time

- Re-cooking or reheating a product to the proper temperature
- Modifying food handling procedures
- Discarding products

1.4.2.6. Establishing procedures of verification to confirm that the HACCP system is working effectively (i.e. Performance monitoring & auditing)

An in-depth audit should take place by the management audit team for the entire HACCP system at least once a year. Additional audits should be conducted whenever there are new products, new recipes, or new processes.

1.4.2.7. Establishing documentation concerning all procedures and records appropriate to these principles and their application.

Recordkeeping is an essential part of the HACCP system. Monitoring results for each CCP must be recorded for review by management. These records indicate to management that work is evaluated properly, handled, and processed foods and ingredients.

1.4.3. Key Performance Indicators:

1.4.4. KPI-1

Suitability of catering facilities, where the caterer's facilities must be fit for purpose and meet the technical requirements laid out in the contracts which should be compatible with international standards. The performance target should be 100 % compliance and monitoring frequency to be on a monthly basis through weekly camp inspection reports in addition to a pre-qualification or renewal of the contract.

1.4.5. KPI-2

Meeting legal requirements, where rig contractors and their sub-contractors (caterers) should comply with local regulations and with drilling company food and water management guidance. The performance target should be 100 % compliance and monitoring frequency to beat Pre-qualification or renewal of contract.

1.4.6. KPI-3

Health status of staff, where it can affect food and water safety. The performance target is that all health and vaccination certificates must be up to date (consider the Egyptian legal requirements related to frequencies of staff health checks and certifications expiry dates). Performance monitoring shall be conducted frequently basis in addition to a pre-qualification and renewal of the contract.

1.4.7. KPI-4

Temperature control documentation, where food temperatures are critical to food safety and robust measurements and recording is required at all stages from delivery and transportation then to service. The performance target is that all records should be available for all items identified under 'key controls' Temperature should be recorded 3 times each day. Monitoring frequency is to be performed periodically depending on risk.

1.4.8. KPI-5

Cleaning schedules, Robust cleaning schedules must be in place. The schedule should state what, how, when and who cleans equipment. Performance target is that records of cleaning activities supported by visual observation should be maintained. Monitoring Frequency should be periodically depending on risk and findings from inspections and audits.

1.4.9. KPI-6

Training, Where all levels of catering staff should meet the standards set out in the training matrix. Performance target is 100% compliance since there is no exception for prospective caterer. Existing caterer allowed three months to confirm qualification. Monitoring Frequency is to be at pre-qualification process and periodically depending on staff turnover.

1.4.10. KPI-7

Waste management, where the caterers have the ultimate responsibility to be aware by drilling company waste management procedures in addition the clients' contractual obligations and to act accordingly by the way that shall not cause harm to the environment, galley operations wastes shall be segregated and to be disposed as per the above mentioned references. Monitoring process shall take place on daily basis by the rig supervisors in addition to pre-qualification and at the renewal of contract.

1.4.11. Operating Procedures for Selected Critical Points

1.4.11.1. Eliminating Hand Contact when Handling Ready to Eat Foods

Instructions

- Train food service employees on using the procedures in their company's manual.
- Follow legal health regulations.
- Use proper hand washing procedures to wash hands and exposed arms prior to preparing or handling food or at any time when the hands may have become contaminated.
- Don't use bare hand to handle ready to eat foods at any time unless washing fruits and vegetables.
- Using suitable utensils when working with ready to eat food, which may include;
- Single-use gloves, Deli tissue, foil wrap, dispensing equipment (ex: spoons)

Monitoring

Camp boss and physician should visually observe that bare hand contact with ready to eat food is eliminated and that gloves or suitable utensils are used and changed at the appropriate times during all hours of operation.

Corrective Actions

- Retain any food service employee found not following the procedures in this standard operating procedure.
- Discard ready to eat food touched with bare hands.

Verification and Recordkeeping

Catering contractor representative is responsible to verify that all his food service workers are using suitable utensils by giving hygiene trainings and visually monitoring food service employees during all hours of operation.

1.4.11.2. Holding Hot and Cold Potentially Hazardous Foods

Instructions

- Train catering food service employees on using their company's procedures manual.
- Follow legal requirements.
- Hold hot foods at 135oF or above.(preheat through steam tables or hot boxes)
- Hold cold foods at 41oF or below.

Monitoring

- Use a clean, sanitized, probe thermometer to measure food temperature or equivalent mean of measuring temperatures.
- Take temperatures of foods by inserting the thermometer near the surface of the product, at the thickest part, and at other varies locations.
- Take temperatures of holding units by placing a calibrated thermometer in the coolest part of a hot holding unit or warmest part of a cold holding unit.
- For hot foods held for service:
  - Verify that the air/water temperature of any unit is at 135oF or above before use.
  - Reheat foods in accordance with reheating for hot holding mention in this standard operating procedure.
  - All hot potentially hazardous foods should be 135oF or above before placing in hot holding units.
  - Take the internal temperature of food before placing it on a steam table or in a hot holding unit and at least every 2 hours thereafter.
- For cold foods held for service:
  - Verify that the air/water temperature of any unit is at 41oF or below before use.
  - Chill foods, if applicable, in accordance with the cooling potentially hazardous foods standard operating procedures.
  - All cold potentially hazardous foods should be 41oF or below before placing the food in holding units.
  - Take the internal temperature of food before placing it onto any salad bar, display cooler, or cold serving line and at least every 2 hours thereafter.
- For cold foods in storage:
  - Take the internal temperature of the food before placing it into any walk-in cooler or reach-in cold holding unit.
  - Verify that air temperature of any cold holding unit is at 41oF or below before use.
- For cold foods in storage:
  - Take the internal temperature of the food before placing it into any walk-in cooler or reach-in cold holding unit.
  - Chill food in accordance with the Cooling Potentially Hazardous Foods SOP if the food is not 41 °F or below.
  - Verify that the air temperature of any cold holding unit is at 41 °F or below before use and at least every 4 hours thereafter during all hours of operation.

Corrective Actions

- Retrain any food service employee found not following the procedures in this SOP.
- for hot foods:
  - Reheat the food to 165 °F for 15 seconds if the temperature is found to be below 135 °F and the last temperature measurement was 135 °F or higher and taken within the last 2 hours.
  - Repair or reset holding equipment before returning the food to the unit, if applicable.
  - Discard the food if it cannot be determined how long the food temperature was below 135 °F.
- For cold foods:
  - Rapidly chill the food using an appropriate cooling method if the temperature is found to be above 41 °F and the last temperature measurement was 41 °F or below and taken within the last 2 hours:
  - Place food in shallow containers (no more than 4 inches deep) and uncovered on the top shelf in the back of the walk-in cooler.
  - Use a quick-chill unit like a blast chiller.
  - Stir the food in a container placed in an ice water bath.
  - Add ice as an ingredient.
  - Separate food into smaller or thinner portions.
  - Repair or reset holding equipment before returning the food to the unit, if applicable.
  - Discard the food if it cannot be determined how long the food temperature was above 41 °F.

Verification and Recordkeeping

Food service employees will record the temperatures of food items and document Corrective Actions taken on the Hot and Cold Holding Temperature Log. A designated food service employee will record the air temperatures of coolers and cold holding units on the Refrigeration Logs. The Subcontractor's Camp boss will verify that food service employees have taken the required holding temperatures by visually monitoring food service employees during the shift and reviewing the temperature logs at the close of each day. The temperature logs are to be kept on file for a minimum of 1 year.

N.B. Rig contractor camp boss shall ensure that the temperature log is kept up to date

1.4.11.3. Personal Hygiene

Instructions

- Train food service employees on using the procedures in this SOP.
- Follow legal requirements and regulations.
- Report to work in good health, clean, and dressed appropriately.
- Wash hands properly, frequently, and at the appropriate times.
- Keep finger nails trimmed, filed, and maintained so that the edges are cleanable and not rough.
- Don't wear artificial fingernails with exposed foods unless wearing gloves.
- Don't wear any jewelry except for a plain ring such as a wedding band.
- Treat and bandage wounds and sores immediately. When hands are bandaged, single-use gloves must be worn.
- Eat, drink, use tobacco, or chew gum only in designated areas where food or food contact surfaces may not become contaminated.
- Taste food the correct way:
  - Place a small amount of food into a separate container.
  - Step away from exposed food and food contact surfaces.
  - Use a teaspoon to taste the food. Remove the used teaspoon and container to be washed in basin. Never reuse a spoon that has already been used for tasting.
  - Wash hands immediately.
- Wear suitable and effective hair restraints while in the kitchen.

Monitoring

- HSE Engineer will inspect food service employees when they report to work to be sure that each employee is following this SOP.
- Camp boss will monitor that all food service employees are adhering to the personal hygiene policy during all hours of operation.

Corrective Actions

- Retain any food service employee found not following the procedures in this SOP.
- Discard affected food.

Verification and Recordkeeping

The camp boss and physician will verify that food service employees are following this SOP by visually observing the employees during all hours of operation. The Sub-contractors Camp Boss and rig contractor camp boss will complete the food safety checklist daily. Food service employees will record any discarded food on the damaged or discarded product log. The HSE engineer is to inspect and supervise the whole personal hygiene SOP. Logs are to be kept for a minimum of 1 year.

I.4.II.4. Using and Calibrating Thermometers

Instructions

- Train food service employees on using the procedures in this SOP.
- Follow legal requirements and regulations.
- Follow the food thermometer manufacturer's regulations for use. Use a food thermometer that measures temperatures from 0oF (-18oC) to 220oF (104oC) and is appropriate for the temperature being taken. For example;
  - Temperatures of thin products, such as hamburgers, chicken breasts, pizza, filets, nuggets, hotdogs, and sausage patties, must be taken using a thermocouple with a thin probe.
  - Bimetallic, dial-faced stem thermometers are accurate only when measuring temperatures of thick foods. They may not be used to measure temperatures of thin foods.
- Have food thermometers easily accessible to food service employees during all hours of operation.
- Clean and sanitize food thermometer before use. (Wiping cloth with approved sanitizer or alcohol swab approved to sanitize thermometer probe.)
- Store food thermometers in an area that is clean and where they are not subjected to contamination.

Monitoring

- Food service employees will use the ice-point method or boiling method to verify the accuracy of food thermometers.
- To use ice-point method:
  - Prepare a cup of ice with enough cold water to remove any air pockets.
  - Insert thermometer probe at least 5 cm into the ice water making sure not to touch sides or bottom of the cup.
  - Allow temperature reading to stabilize before reading the temperature.
  - Temperature measurement should be 0oC (+ or -1). If adjustment is required, follow manufacturer's instructions.
- To use boiling point method:
  - Immerse at least 5cm of the probe into boiling water making sure not to touch sides or bottom of cup.
  - Allow the temperature reading to stabilize before reading the temperature.
  - Reading should be 100oC (+ or -1). If adjustment required, follow manufacturer's instructions.
- Food service employees will check the accuracy of food thermometers:
  - At regular intervals (at least once per week)
  - If dropped.
  - If used to measure extreme temperatures, such as in an oven.
  - Whenever accuracy is in question.

Corrective Actions

- Retrain any food service employee not following the procedures in the SOP.
- For an inaccurate, digital thermometer with a reset button, adjust the thermometer according to manufacturer's instructions.
- If an inaccurate thermometer can't be adjusted on site, discontinue using it, and follow the manufacturer's instructions for having the thermometer calibrated.
- Retrain employees who are using or calibrating food thermometers improperly.

Verification and Recordkeeping

Food service employees will record the calibration temperature and Corrective Actions taken, if applicable. The caterer will verify that food service employees are using and calibrating thermometers properly by making visual observations of the employees during the calibration process and all operating hours. The HSE engineer will review and initial the thermometer calibration log weekly. The calibration log will be kept on file for a minimum of 1 year.

1.4.11.5. Limiting Bacterial Growth in Potentially Hazardous Foods

Instructions

- Train food service employees on using the procedures in this SOP. Refer to the using and calibrating thermometers SOP.
- Follow legal requirements and regulations.
- Expect during preparation, cooking, or cooling, potentially hazardous foods shall be maintained at 135oF or above, or at 41oF or below.
- Cook raw potentially hazardous food within hours past the point when the food is removed from temperature control.
- Serve or discard cooked or ready-to-eat food within 4 hours past the time when the food is removed from temperature control.

Monitoring

- Rig contractor Caterer & physicians will continually monitor that foods are properly marked or identified with the time that is 4 hours past the point when the food is removed from temperature control.
- Rig contractor and Caterer will continually monitor that foods are cooked, served, or discarded by the indicated time.

Corrective Actions

- Retrain any food service employee found not following the procedures in SOP.
- Discard unmarked or unidentified food removed from temperature control.
- Discard food that is noted to exceed the 4-hour limit.

Verification and Recordkeeping

Food service employees will mark or otherwise identify food as specified in the instructions section of this SOP. The physicians will verify that food service employees are following these procedures by visually monitoring food service employees and food handling during the shift. Food safety checklist is to be kept for at least one year.

1.4.12. Storing and Using Poisonous or Toxic Chemicals.

Instructions

- Train food service employees on using the procedures in this SOP.
- Follow legal requirements.
- Designate a location for storing the Material Safety Data Sheets (MSDS).
- Follow manufacturer’s directions for specific mixing, storing, and first aid
- Instructions on the chemical containers in the MSDS.
- Label and date all poisonous or toxic chemicals with the common name of the substance.
- Store all chemicals in a designated secured area away from food and food contact surfaces using spacing or partitioning.
- Limit access to chemicals by use of locks, seals, or key cards.
- Maintain an inventory of chemicals.
- Store only chemicals that are necessary to the operation and maintenance of the kitchen.
- Use the appropriate chemical test kit to measure the concentration of sanitizer each time a new batch of sanitizer is mixed.
- Do not use chemical containers for storing food or water.
- Label and store first aid supplies in a container that is located away from food or food contact surfaces.
- Do not store medicines in food storage areas.

Monitoring

Camp boss and food service manager will visually observe that chemicals are being stored, labeled, and used properly during all hours of operation.

Corrective Actions

- Retrain any food service employee found not following the procedures in this SOP.
- Discard any food contaminated by chemicals.
- Label and properly store any unlabeled or misplaced chemicals.

Verification and Recordkeeping

The Camp boss will complete the Food Safety Checklist daily to indicate that monitoring is completed. Food service employees will record the name of the contaminated food, date, time, and the reason why the food was discarded on the Damaged and Discarded Product Log. The Rig physician will verify that appropriate Corrective actions are being taken by reviewing, initialing, and dating the Damaged and Discarded Product Log each day. The Food Safety Checklist and Damaged and Discarded Product Logs are kept on file for a minimum of 1 year.

1.4.12.1. Preventing Contamination at Food Bars

Instructions

- Train food service employees on using the procedures in this SOP.
- Follow legal requirements.
- Follow Employee Health Policy, Personal Hygiene, and Washing hands.
- Follow the manufacturer's instructions for pre-heating and pre-chilling food bar equipment before use.
- Place all exposed food under sneeze guards.
- Provide an appropriate clean and sanitized utensil for each container on the food bar.
- Replace existing containers of food with new containers when replenishing the food bar.
- Assist customers who are unable to properly use utensils.
- Ensure that customers use a clean dish when returning to the food bar and avoid using spray chemicals to clean food bars when in use.

Monitoring

- Monitor and record temperatures of food in accordance with SOP.
- Continually monitor food containers to ensure that utensils are stored on a clean and sanitized surface or in the containers with the handles out of the food.
- Continually monitor customers' use of the food bar to ensure that customers are not:
  - Touching food with their bare hands
  - Coughing, spitting, or sneezing on the food
  - Placing foreign objects in the food
  - Using the same plate for subsequent trips

Corrective Actions

- Retrain any food service employee found not following the procedures in this SOP.
- Remove and discard contaminated food.
- Demonstrate to customers how to properly use utensils.
- Discard the food if it cannot be determined how long the food temperature was above 41 °F or below 135 °F.

Verification and Recordkeeping

The Rig Contractor camp boss/caterer camp boss will verify that food service employees are assigned to maintain food bars during all hours of operation. Food service employees will record the temperatures of food items and document Corrective actions taken on the Hot and Cold Holding

Temperature Log. The Rig Contractor camp-boss/caterer camp-boss will complete the Food Safety Checklist daily. This form is to be kept on file for a minimum of 1 year. Food service employees will document any discarded food on the Damaged or Discarded Product Log. The Rig Contractor camp-boss/caterer camp-boss will verify that appropriate Corrective actions are being taken by reviewing, initialing, and dating the Damaged or Discarded Product Log each day. The Hot and Cold Holding Temperature Log and the Damaged or Discarded Product Log are to be kept on file for a minimum of 1 year.

1.4.12.2. Preventing Cross-Contamination during Storage and Preparation.

Instructions

- Train food service employees on using the procedures in this SOP.
- Follow legal requirements.
- Wash hands properly. Refer to the Washing Hands SOP.
- Avoid touching ready-to-eat food with bare hands
- Separate raw animal foods, such as eggs, fish, meat, and poultry from ready-to-eat foods, such as lettuce, and lunch meats during receiving, storage, and preparation.
- Separate different types of raw animal foods, such as eggs, fish, meat, and poultry, from each other, except when combined in recipes.
- Store raw animal foods in refrigerators or walk-in coolers by placing the raw animal foods on shelves in order of cooking temperatures with the raw animal food requiring the highest cooking temperature, such as chicken, on the lowest shelf.
- Separate unwashed fruits and vegetables from washed fruits and vegetables and other ready-to-eat foods.
- Use only dry, cleaned, and sanitized equipment and utensils.
- Touch only those surfaces of equipment and utensils that will not come in direct contact with food.
- Place food in covered containers or packages, except during cooling, and store in the walk-in refrigerator or cooler.
- Designate an upper shelf of a refrigerator or walk-in cooler as the “cooling” shelf. Uncover containers of food during the initial quick cool-down phase to facilitate cooling.
- Clean the exterior surfaces of food containers, such as cans and jars, of visible soil before opening.
- Store damaged goods in a separate location.

Monitoring

A designated food service employee will continually monitor food storage and preparation to ensure that food is not cross-contaminated.

Corrective Actions

- Retrain any food service employee found not following the procedures in this SOP.
- Separate foods found improperly stored.
- Discard ready-to-eat foods that are contaminated by raw eggs, raw fish, raw meat, or raw poultry.

Verification and Recordkeeping

The rig physician will visually observe that employees are following these procedures and taking all necessary Corrective Actionss during all hours of operation. The caterer supervisor will periodically check the storage of foods during hours of operation and complete the Food Safety Checklist daily. The Food Safety Checklist will be kept on file for a minimum of 1 year. Food service employees will document any discarded food on the Damaged and Discarded Product Log. The Camp boss will verify that appropriate Corrective Actionss are being taken by reviewing, initialing, and dating the Damaged and Discarded Product Log each day. The Damaged and Discarded

Product Log is to be kept on file for a minimum of 1 year.

1.4.12.3. Reheating Potentially Hazardous Foods

Instructions

- Train food service employees on using the procedures in this SOP. Refer to the Using and Calibrating Thermometers SOP.
- Follow legal requirements.
- Reheat the following products to 165 °F for 15 seconds:/.nbvc003E
- Any food that is cooked, cooled, and reheated for hot holding
- Leftovers reheated for hot holding
- Products made from leftovers, such as soup
- Precooked, processed foods that have been previously cooled

Reheat food for hot holding in the following manner if using a microwave oven

- Heat processed, ready-to-eat foods from a package or can to at least 135 °F for 15 seconds
- Heat leftovers to 165 °F for 15 seconds
- Rotate (or stir) and cover foods while heating
- Allow to sit for 2 minutes after heating
  - Reheat all foods rapidly. The total time the temperature of the food is between 41 °F and 165 °F may not exceed 2 hours.
  - Serve reheated food immediately or transfer to an appropriate hot holding unit.

Monitoring

- Use clean, sanitized, and calibrated probe thermometer.
- Take at least two internal temperatures from each pan of food.

Corrective Actions

- Retrain any food service employee found not following the procedures in this SOP.
- Continue reheating and heating food if the internal temperature does not reach the required temperature.

Verification and Recordkeeping

Food service employees will record product name, time, the two temperatures/times, and any Corrective Actions taken on the Cooking and Reheating Temperature Log. Camp boss will verify that food service employees have taken the required reheating temperatures by visually monitoring food service employees during the shift and reviewing, initialing, and dating the Cooking and Reheating Temperature Log at the close of each day. The temperature logs are kept on file for a minimum of 1 year.

1.4.12.4. Washing Hands

Instructions:

- Train food service employees on using the procedures in this SOP.
- Follow legal requirements.
- Post hand washing signs or posters in a language understood by all food service staff near all hand washing sinks, in food preparation areas, and restrooms.
- Use designated hand washing sinks for hand washing only. Do not use food preparation, utility, and dishwashing sinks for hand washing.
- Provide warm running water, soap, and a means to dry hands. Provide a waste container at each hand washing sink or near the door in restrooms.
- Keep hands washing sinks accessible anytime employees are present.
- Wash hands:
  - Before starting work

- During food preparation
- When moving from one food preparation area to another
- Before putting on or changing gloves
- After using the toilet
- After sneezing, coughing, or using a handkerchief or tissue
- After touching hair, face, or body
- After smoking, eating, drinking, or chewing gum or tobacco
- After handling raw meats, poultry, or fish
- After any clean up activity such as sweeping, mopping, or wiping counters
- After touching dirty dishes, equipment, or utensils
- After handling trash
- After handling money
- After any time the hands may become contaminated

• Follow proper handwashing procedures as indicated below:
  - Wet hands and forearms with warm, running water at least 100 °F and apply soap.
  - Scrub lathered hands and forearms, under fingernails, and between fingers for at least 10-15 seconds. Rinse thoroughly under warm running water for 5-10 seconds.
  - Dry hands and forearms thoroughly with single-use paper towels.
  - Dry hands for at least 30 seconds if using a warm air hand dryer.
  - Turn off water using paper towels.
  - Use paper towel to open door when exiting the restroom.

Monitoring

• A designated employee will visually observe the handwashing practices of the food service staff during all hours of operation.
• The designated employee will visually observe that handwashing sinks are properly supplied during all hours of operation.

Corrective Actions

• Retrain any food service employee found not following the procedures in this SOP.
• Ask employees that are observed not washing their hands at the appropriate times or using the proper procedure to wash their hands immediately.
• Retrain employee to ensure proper handwashing procedure.

Verification and Recordkeeping

The caterer supervisor will complete the Food Safety Checklist daily to indicate that monitoring is being conducted as specified. The Food Safety Checklist is to be kept on file for a minimum of 1 year.

1.4.12.5. Transporting Food to Remote Sites

Instructions

• Train food service employees on using the procedures in this SOP.
• Follow legal requirements.
• Prepare the food carrier before use:
  - Ensure that all surfaces of the food carrier are clean.
  - Wash, rinse, and sanitize the interior surfaces.
  - Ensure that the food carrier is designed to maintain cold food temperatures at 41 °F and hot food temperatures at 135 °F or above.
  - Place a calibrated stem thermometer in the warmest part of the carrier if used for transporting cold food, or the coolest part of the carrier if used for transporting hot food. Refer to the Using and Calibrating Thermometers SOP.
  - Pre-heat or pre-chill the food carrier according to the manufacturer's recommendations.
• Store food in containers suitable for transportation. Containers should be:

- Rigid and sectioned so that foods do not mix
- Tightly closed to retain the proper food temperature
- Nonporous to avoid leakage
- Easy-to-clean or disposable
- Approved to hold food

- Place food containers in food carriers and transport the food in clean trucks, if applicable, to remote sites as quickly as possible.
- Follow Receiving Deliveries SOP when food arrives at remote site.

Monitoring

- Check the air temperature of the food carrier to ensure that the temperature suggested by the manufacturer is reached prior to placing food into it.
- Check the internal temperatures of food using a calibrated thermometer before placing it into the food carrier. Refer to the Holding Hot and Cold Potentially Hazardous Foods SOP for the proper procedures to follow when taking holding temperatures.

Corrective Actions

- Retrain any food service employee found not following the procedures in this SOP.
- Continue heating or chilling food carrier if the proper air temperature is not reached.
- Reheat food to 165 °F for 15 seconds if the internal temperature of hot food is less than 135 °F. Refer to the Reheating Potentially Hazardous Foods SOP.
- Cool food to 41 °F or below using a proper cooling procedure if the internal temperature of cold food is greater than 41 °F. Refer to the Cooling Potentially Hazardous Foods SOP for the proper procedures to follow when cooling food.
- Discard foods held in the danger zone for greater than 4 hours.

Verification and Recordkeeping

Before transporting food to remote sites, food service employees will record food carrier temperature, food product name, time, internal temperatures, and any Corrective Actions taken on the Hot and Cold Holding Temperature Log. Upon receipt of food at remote sites, food service employees will record receiving temperatures and Corrective Actions taken on the Receiving Log. The caterer supervisor at central kitchens will verify that food service employees are following this SOP by visually observing employees and reviewing and initialing the Hot and Cold Holding Temperature Log daily. The camp boss will verify that food service employees are receiving foods at the proper temperature and following the proper receiving procedures by visually observing receiving practices during the shift and reviewing and initialing the Receiving Log daily. All logs are kept on file for a minimum of 1 year.

1.4.12.6. Cooling Potentially Hazardous Foods

Instructions

- Train food service employees on using the procedures in this SOP. Refer to the Using and Calibrating Thermometers SOP.
- Follow legal requirements.
- Prepare and cool food in small batches.
- Chill food rapidly using an appropriate cooling method:
  - Place food in shallow containers no more than 4 inches deep and uncovered on the top shelf in the back of the walk-in or reach-in cooler.
  - Use a quick-chill unit such as a blast chiller.
  - Stir the food in a container placed in an ice water bath.
  - Add ice as an ingredient.
  - Separate food into smaller or thinner portions.
  - Pre-chill ingredients and containers used for making bulk items such as salads.
- If State or local requirements are based on the 2001 FDA Food Code, chill cooked, hot food

from:

- 135 °F to 70 °F within 2 hours. Take Corrective Actions immediately if food is not chilled from 135 °F to 70 °F within 2 hours.
- 70 °F to 41 °F or below in remaining time. The total cooling process from 135 °F to 41 °F may not exceed 6 hours. Take Corrective Actions immediately if food is not chilled from 135 °F to 41 °F within the 6 hour cooling process.

• Chill prepared, ready-to-eat foods such as tuna salad and cut melons from 70 °F to 41 °F or below within 4 hours. Take Corrective Actions immediately if ready-to-eat food is not chilled from 70 °F to 41 °F within 4 hours.

Monitoring

- Use a clean, sanitized, and calibrated probe thermometer to measure the internal temperature of the food during the cooling process.
- Monitor temperatures of products every hour throughout the cooling process by inserting a probe thermometer into the center of the food and at various locations in the product.

Corrective Actions

- Retrain any food service employee found not following the procedures in this SOP.
- Reheat cooked, hot food to 165 °F for 15 seconds and start the cooling process again using a different cooling method when the food is:
  - Above 70 °F and 2 hours or less into the cooling process; and
  - Above 41 °F and 6 hours or less into the cooling process.
- Discard cooked, hot food immediately when the food is:
  - Above 70 °F and more than 2 hours into the cooling process; or
  - Above 41 °F and more than 6 hours into the cooling process.
- Use a different cooling method for prepared ready-to-eat foods when the food is above 41 °F and less than 4 hours into the cooling process.
- Discard prepared ready-to-eat foods when the food is above 41 °F and more than 4 hours into the cooling process.

Verification and Recordkeeping

Food service employees will record temperatures and Corrective Actionss taken on the Cooling Temperature Log. Food service employees will record if there are no foods cooled on any working day by indicating "No Foods Cooled" on the Cooling Temperature Log. The rig physician will verify that food service employees are cooling food properly by visually monitoring food service employees during the shift and reviewing, initialing, and dating the temperature log each working day. The Cooling Temperature Logs are to be kept on file for a minimum of 1 year

1.5. Guidance for Action Tracking

Criteria	Example	Green	Yellow	Red
Blast chilling, refrigera-tors/walk in chillers	Equipment capable of being able to rapidly reduce and/or maintain food temperatures between 1 °C and 5 °C.	Available and working within specification.	Available but maintaining food temperatures between 5°C and 8°C.	Not available or maintaining food temperatures above 8°C.
Chilled food Temperature	Food should not be left out at ambient temperature for more than 20 minutes, and temperature checked on delivery	5°C or below	Between 5°C and 8°C Food left at ambient temperature for more than 20 minutes.	Above 8°C
Cleaning	Robust cleaning schedule in place, and catering grade cleaning products available and used.	Cleaning schedule in place and catering grade chemicals in use.	Cleaning schedule available but not implemented, or non-catering grade chemicals in use.	No evidence of organized cleaning and use of non-catering grade chemicals.
Cooking too far in Advance	Food should be cooked as close to consumption as possible. Cooking far in advance due to power cuts is not acceptable.	Food cooked as late as possible before service and/or during service.	Completion of cooking more than an hour prior to service with adequate temperature controls in place.	Completion of cooking more than an hour prior to service with inadequate temperature control.
Cross-contam-ination	Controlled through the use of color-coded chopping boards, knives and cleaning cloths. Raw foods stored below cooked (ready to eat) foods or physically segregated.	Provision and effective segregation of color-coded chopping boards, knives, cloths and correct food storage.	Color-coded equipment provided but used incorrectly.	No color-coded equipment available. Cross-contamination between raw and cooked.
Fitness for work	All food handlers are vaccinated and medically screened periodically and prior to commencement of work.	Full compliance. Valid certificates/ documentation available in facility	Program in place but documentation incomplete or expired	No evidence of compliance.
Freezers/walk in Freezers	Should be easily capable of storing food at or below -18°C	-18°C or lower	Between -18°C and -12°C	Above -12°C

Criteria	Example	Green	Yellow	Red
Hand washing Provision	Wash hand basins (WHB) should be unobstructed and sited near entrances and provided with liquid soap dispensers, hand drying facilities and waste bin.	Located near entrances, accessible and with soap and hand drying facilities	Not located near to entrances but with soap and drying facilities	No soap or drying facilities available at WHB.
Heating, ventilation, air conditioning	Air temperatures in kitchen being maintained at 30°C or below and capable of removing cooking vapors.	Kitchen temperatures at 30°C or less. Vapors being extracted.	Kitchen temperatures between 30°C and 40°C.	Kitchen temperatures above40°C or inadequate extraction of cooking vapors
Hot and cold Displays	Should be able to keep food hot(above 63°C) and cold (below 5°C).	63°C or above / 5°C or below	Between 60°C and 63°C /5°C and 8°C	Below 60°C / above 8°C
Hot food temperature control	Cooked food to achieve a core temperature of 75°C and to be kept at 63°C or above for no more than 4 hours.	75°C or above on completion of cooking. Food kept at 63°C or above for less than 4 hours.	Between 70°C and 75°Con completion of cooking. Food kept above 63°C for more than 4 hours.	Less than 70°C on completion of cooking. Food held below 63°C.
Hot holding cabinets	Should be able to keep hot food at 63°C or above.	Cabinet maintaining temperature above 63°C.	Cabinet maintaining temperature between60°C and 63°C.	Cabinet not achieving 60°C or cabinets required but not provided.
Hot water provision	Capacity and temperatures should be appropriate to use.	82°C (disinfection sinks and dishwashers) 60°C (detergent sinks) 43°C–49°C (WHB). Available at all times.	60°C (disinfection sink and dishwashers) 40°C–43°C (WHB). Sporadic hot water availability.	<60°C (disinfection sinks and dishwashers). <40°C or >49°C (WHB). Inadequate supply.
Personal hygiene	Staff washing their hands on entering food preparation areas, change of task and after using the toilet.	Staff observed engaging in correct hand washing during visit.	Staff not washing hands thoroughly or regularly.	Staff not washing hands after visiting toilets or handling refuses.

Criteria	Example	Green	Yellow	Red
Pest control	Facility should be pest free and designed to keep pests out.	Effective pest control measures in place.	Pest activity identified but control measures in place.	Evidence of uncontrolled pest presence and/ or an absence of control measure.
Physical / chemical contaminants	Effective control of cleaning chemicals (e.g. MSDS in place), glass, ceramics, wood, decanted ingredients etc.	Control over potential contaminants. Dedicated chemical storage.	Procedure in place but not fully implemented	No MSDS in place. Chemicals stored with food. No physical contaminant control. Significant potential for contamination.
Refuse Arrangements	Bins effectively distributed within the kitchen. External bins enclosed and kept away from kitchen.	Lidded external bins stored away from entrances; appropriate internal bins	Bins with manual lids in use internally. Some refuse strewn outside.	Waste bins overflowing. External food bins open, attracting pests.
Salad preparation	Potable water and sanitizer used to disinfect and rinse salad vegetables.	Sanitizer and potable water used to disinfect and rinse salad vegetables.	Potable water available but rinsing not carried out.	Potable water/ salad washing/ sanitizer not used.
Structure and layout	There should be a linear workflow that allows staff to work without compromising food safety.	Easily capable of providing safe food for the intended number of customers	Poor layout with most tasks being conducted in one area.	Area too small to meet the demand. Risk of contamination, e.g. cooked food and raw foods prepared in same area.
Training	Supervisors trained to Food Safety for Managers level and all food handlers given a minimum of an induction and 6 hours food hygiene training.	Supervisors have attained Food Safety for Managers level and food handlers trained.	Supervisors about to take Food Safety for Managers course, and food handlers trained with training program implemented.	Supervisors have not attended Food Safety for Managers and/ or no training program in place for food handlers.

1.6. Catering Action Report

Report No: Site Visited: Date of Inspection: Inspected by: Facility Provider responsible Caterer Responsible					
Area/ Location/ Issue	**Defect/Non confor-mance**	**Action**	**Action by**	**Target date**	**Status**
Blast chilling, refrigerators/ walk in chillers					
Chilled food temperature					
Cleaning					
Cooking too far in advance					
Cross-contamination					
Fitness for work					
Freezers/walk in freezers					
Hand washing provision					
Heating, ventilation, air conditioning					
Hot and cold displays					
Hot food temperature control					
Hot holding cabinets					
Hot water provision					
Personal hygiene					
Pest control					
Physical / chemical contaminants					
Refuse arrangements					
Salad preparation					
Structure and layout					
Training					

1.7. Catering Hygiene Checklist

Inspection is a tool to monitor standards, key controls and assess particular issues

Catering Facilities Checklist		
Kitchen facilities should be inspected and reported on weekly basis. Suggested points to include are: Food handling, kitchen, dining, housekeeping and waste management. Prepared by: Date: Sat. = When checked and satisfactory Unsat. = When checked and if unsatisfactory, requires comment and short description of Planned mitigating action / who is responsible for mitigation / due date. Must be Filed.		
	Sat.	Unsat.
Delivery of food		
Documentation of certificate of origin, receipts, and expiry date of goods checked		
Cleanliness of delivery area		
Comments:		
Garbage Area		
Maintenance of structure		
Cleanliness of structure		
Insects absence		
Rodent absent		
Collection frequency		
Comments:		
Washing-up area		
Maintenance of fittings		
Cleanliness of fittings		
Pre-scraping carried out		
Dish washer provided		
Machine temperatures adequate, rinse temperature above 82°C		
Equipment sanitized by chemical or heat 60°C if hand washed		
Tap water of sufficient quantity		
Protective gloves available for manual dish washing		
Comments:		

Cold rooms and refrigerators		
Maintenance of structure		
Cleanliness of structure		
Cleanliness of shelves		
Food in cold room stored, no more than 10°C		
Fridge temperature below 5°C		
Raw and cooked foods adequately separated and covered		
Thermometer provided and in working order		
Temperature log kept and satisfactory (in hot areas, morning and evening temperature is not adequate, should include reading from the hottest part of the day during summer season)		
Door seals clean and in good condition		
Comments:		
Clean equipment and utensil storage		
Maintenance and structure		
Cleanliness of structure		
Maintenance of fittings		
Cleanliness of fittings		
Stored equipment protected from dust and dirt		
Proper color coded wipe/polish cloths available and used		
Comments:		
Bulk dry store		
Maintenance and structure		
Cleanliness of structure		
Maintenance of fittings		
Cleanliness of fittings		
Temperature satisfactory		
No goods stored on the ground/floor		
Comments:		
Freezers		
Maintenance of structure		
Cleanliness of structure		
Cleanliness of shelves		
Food stored above floor level		

Raw and cooked foods adequately separated and covered		
Door seals clean and in good condition		
Frozen foods thawed in cold room before use		
Temperature below -18°C		
Temperature log kept and satisfactory		
Thermometer provided and in working order		
Comments:		
Kitchen		
Maintenance and structure		
Cleanliness of structure		
Maintenance of fittings		
Cleanliness of fittings		
Sink provided is clean		
Room temperature satisfactory during preparation of meals, ambient temperature around 30°C		
Sufficient hot water at the correct temperature provided		
Drains sufficient and working		
Cleaning program in place and well communicated to staff		
Ventilation working satisfactorily		
Ventilator hoods have grease filters		
Designated hand washing sinks with liquid soap, pedal bin and paper towels, water temperature between 45 and 49°C		
Comments:		
Beverage/Ice area		
Maintenance and structure		
Cleanliness of structure		
Maintenance of fittings		
Cleanliness of fittings		
Water supply to ice machine satisfactory		
Ice scoop stored satisfactorily		
Cold drinks machine regularly dismantled and sanitized		
Comments:		

Toilets		
Maintenance and structure		
Cleanliness of structure		
Maintenance of fittings		
Cleanliness of fittings		
Aerially disconnected from food production area		
Hot and cold water provided		
Soap provided		
Single user towels provided		
'NOW WASH YOUR HANDS' sign displayed		
Floors dry		
Comments:		
Miscellaneous overall		
Kitchen/dining facilities sufficient for the number of people served		
Kitchen staff sufficient for the number of meals prepared		
Changing facilities provided for staff		
No equipment or pots stored directly on floor		
Electronic fly killer installed		
Premises rodent/animal proofed		
Full air conditioning provided		
Food expiry dates satisfactory		
Pest control satisfactory		
Water supply safe for drinking		
Date of last water samples taken		
Power supplies properly maintained		
Cutting and chopping boards color coded		
Comments:		
Procedures		
Written cleaning schedule in use		
Worktops, cutting boards and other small equipment sanitized after use		
Re-usable dry stored items examined before re-use		
Stock rotation of perishable items		
Frozen meat/fish/poultry defrosted in the refrigerator		
Rice to be used is freshly cooked		

Heating cupboards/hot plates working and at correct temperatures		
'NO SMOKING' sign in food production area.		
Toxic items (cleaning materials) labeled correctly and stored in proper places		
Safety data sheet for cleaning agents is available		
Contents of opened food cans transferred to proper containers once opened		
Main rule: food should be cooked hot and served hot: cooked food not allowed to reach temperature below 63°C		
Thermometers and probes, including probe wipes, available to check food temperature.		
Basic first aid equipment available to kitchen staff		
Firefighting equipment available and working		
Fire escapes not blocked		
Comments:		
Staff		
Appearance		
Protective clothing, including shoes (not open slippers), and light colored uniforms		
Protective clothing and uniforms properly laundered		
Head coverings		
Medically examined prior to employment and then at least yearly		
Stool tests included in medical examination		
Infected food handlers excluded from work until cleared		
Food handlers vaccinated (specify according to regulation)		
Comments:		
Corrective Actions To Be Taken		

1.8. Food Safety Checklist

Food Hygiene Inspection Checklist	
	YES/NO
Hand washing facilities	
Are wash hand basins readily accessible and clean, and free of utensils/food waste?	
Is there sufficient hot (43–49°C) and cold water?	
Have soap and drying facilities been supplied and replenished?	

Storage and display temperature control – chilled and frozen	
Are all refrigerators holding food at or below 5°C?	
Are all freezers holding food at or below -18°C?	
Are refrigerators and freezers loaded to ensure that there is unobstructed air flow?	
Are the door seals of all chillers and freezers clean and intact?	
Are all the evaporator fins free from a build-up of ice?	
Can the emergency door release of walk-in refrigerators and freezers be operated effectively?	
Is storage temperatures recorded a minimum of three times a day and documents readily accessible?	
Are actual food temperatures being taken (using probe or infra-red thermometers) and recorded?	
Is Corrective Actions taken and noted when correct food storage/display temperatures have not been achieved?	
Are chilled foods not exposed to ambient temperature for more than 20 minutes during preparation and storage?	
Is the cold display equipment maintaining food at a temperature of 5°C or below?	
Are cold foods transferred to remote canteens in insulated boxes?	
Salad and fruit preparation	
Is the water used for salad preparation of drinking-water quality (potable)?	
Is a chemical sanitizer available and used to disinfect salad products and fruit (excluding oranges, etc. where the peel isn't eaten)?	
Is the strength of the sanitizer checked?	
Are damaged/poor quality fruit and salads removed prior to sanitizing?	
Temperature control - cooking	
Are food temperatures checked immediately after cooking? (Should be 75°C or above)	
Are actual food temperatures being taken (using probe or infra-red thermometers) and recorded?	
Is Corrective Actions taken and noted when correct cooking temperature has not been achieved?	
Does cooking start less than 5 hours before service starts?	
Is everything cooked today for service today?	
Hot holding and hot display	
Is hot holding/hot display equipment turned on at least an hour before food is placed into it, and checked each hour that it is in use?	
Is the hot holding/hot display equipment maintaining food at a temperature of 63°C or above?	
Are actual hot display food temperatures being recorded and records readily accessible?	

Is Corrective Actions taken and noted when the correct food storage temperature has not been achieved?	
Are the hot holding cabinets in a clean, serviceable condition (e.g. door seals clean, undamaged and in contact with the door)?	
Are the water reservoirs for the hot holding cabinets filled and maintained with hot water during use?	
Are hot foods transferred to remote canteens in insulated boxes?	
Indicators of heating, ventilation and air conditioning failures	
Are doors and windows closed in air-conditioned food preparation areas?	
Is the air temperature in food preparation areas below 30°C?	
Are grease filters clean and present in the extraction hoods?	
Cross contamination	
Are color-coded cleaning cloths available (e.g. RED=raw, BLUE=cooked/ready to eat, YELLOW=toilets)?	
Are color-coded knives available (e.g. RED=raw, BLUE=fish, GREEN=salads, BLACK=ready to eat)?	
Is the color-coded equipment being used correctly as above?	
Are chopping boards in good condition (e.g. free from deep scoring)?	
Physical/chemical contaminants	
Are glass objects in the food production/service areas (e.g. bottles, glass shelves or sneeze guards) free from damage or chips?	
Is glass breakages (including ceramics) recorded?	
Are all lights provided with intact diffuser covers?	
Are the diffusers free from dead insects?	
Is food kept above floor level (e.g. stackable containers of meat or prepared vegetables)?	
Are bags of raw ingredients stored on impervious material pallets (not wood)?	
Are bagged products, once opened, decanted into storage bins to avoid pests?	
Are cleaning chemicals and equipment kept in a separate store away from food storage and preparation areas?	
Personal hygiene	
Do food handlers wash their hands on entering a food preparation room? (Observe)	
Do food handlers wash their hands between handling raw and ready-to-eat foods? (Observe)	
Check the hands of 5 food handlers. Are cuts protected by a plaster?	
Are food handlers free from jewelers (a plain wedding band and plain sleeper earrings are acceptable)?	
Are food handlers free from excessive cosmetics and perfume?	

Is suitable headwear for hair provided and used by everyone in the kitchen?	
Are uniforms in an undamaged, clean condition?	
Provision of Hot Water	
Is hot water continuously available for pot washing (e.g. does not run out)?	
Is the temperature of water at pot/dish washing sinks at or above 60°C?	
Is the automated dishwasher rinse cycle at or above 82°C?	
Cleaning	
Is the cleaning schedule followed?	
Is 'clean as you go' appropriately implemented (e.g. spot cleaning)?	
Is detailed cleaning of utensils and equipment performed to an acceptable standard?	
Is general cleaning (e.g. walls, tiles, floors, etc.) performed to an acceptable standard?	
Pest Control	
Are the facilities free from flying insects?	
Is the facility free of the evidence of pest activity (e.g. no droppings, insect bodies, fur, feathers, and product damage)?	
Are all open windows fitted with a fly screen?	
Are all electronic fly killers switched on?	
Training	
Are routine toolbox talks being conducted and recorded?	
Refuse Arrangements	
Do waste bins have lids?	
Are kitchen waste bins pedal operated?	
Are waste bins positioned close to wash hand basins and work benches?	
Are waste bins emptied before they are overflowing?	
Is the external waste holding area clean and tidy?	
Good Receipt	
Are produce temperatures, shelf life dates and packaging condition checked and recorded for each delivery?	
Are accepted chilled products received at 5°C or lower?	
Are accepted frozen goods received at temperatures of -15°C or lower?	
Are chilled and frozen goods delivered in a refrigerated vehicle?	
Are all goods received within manufacturer's expiry/use-by date?	
Are goods in store rooms undamaged and complete with labeling?	
Is there a register of rejected goods indicating reason for rejection and action taken?	

Non-conformances	Correction date

1.9. Insurance on Flowcharts and Critical Points:

Rig Contractors Company should track its catering contractor's Flowcharts which are used in identifying critical control points during the food preparation process. Where catering contractors always should stick to rig contractors company selected deli food flowcharts as a raw model, in addition to providing proven implemented system for identifying critical control points along all hazards identified through catering services

1.9.1. Flowcharts and CCP for Selected Catered Food

HOT ENTREES

Fresh Raw Poultry/Meat Vegetables | Frozen Raw Poultry/Meat Vegetables | Rice and other Ingredients

Flowchart	Potential Hazards	CCP	Critical Limits	Monitoring Procedures	Corrective Actions
Receiving	Spoilage; Contamination and Foreign objects	CCP	No spoilage, Contamination or Foreign objects	Visual Inspection	Reject items with spoilage; contamination of foreign objects
Store in Cooler					
Store in Freezer	Rapid bacterial growth	CCP	Chill to below 40 °F	Measure record cooler air temperature every 4 hours	Adjust cooler thermostat
Thaw	Incomplete thawing; Rapid bacterial growth	CCP	Thaw in cooler or under cold running water, chill to 40 °F after thawing	Observe thawing	Modify thawing practice
Cook	Undercooking may not kill illness-causing bacteria	CCP	Cook to internal temperature of 165 ' Immediate transfer t hot-hold after cookir	Measure record center temperature	Continue cooking
Hold Hot in Steam Table	Rapid bacterial growth	CCP	Product above 140 °F; Hold batches less than 5 hours	Measure record center temperature	Reheat or chill
Chill to Below 40 °F	Rapid bacterial growth	CCP	Chill in shallow container to below 40 °F	Measure record center air temperature every 2 hours	Adjust cooler thermostat
Store in Cooler (40 °F)	Rapid bacterial growth	CCP	Product below 40 °F	Measure record center air temperature every 2 hours	Adjust cooler thermostat
Display Chilled (40 °F)	Rapid bacterial growth	CCP	Product below 40 °F	Measure record center air temperature every 2 hours	Adjust cooler thermostat

SALAD

Flowchart	Potential Hazards	CCP	Critical Limits	Monitoring Procedures	Corrective Actions
Cooked Seafood / Dressing / Other Ingredients					
Receiving	Rapid bacterial growth; Spoilage; Contamination and Foreign objects	CCP	Chilled items below 40 °F; frozen items with no signs of thawing; No spoilage, Contamination and Foreign objects	Visual inspection; measure record temperature	Reject thawed frozen items; chilled items above 40 °F and items with spoilage; contamination or foreign objects
Pre-chill Ingredients (40 °F)	Rapid bacterial growth	CCP	Chill in shallow containers to below 40 °F	Measure record cooler air temperature every 4 hours	Adjust thermostat
Mix Ingredients	Contamination		Minimize hand contacts; use clean utensils	Observe practice	Modify practice
Put in Dish or Storage Container	Contamination		Use clean dish/container	Observe practice	Modify practice
Store in Cooler (40 °F)	Rapid bacterial growth	CCP	Product below 40 °F	Measure record cooler air temperature every 4 hours	Adjust thermostat
Restock	Contamination		Avoid hand contact	Observe practice	Modify practice
Display in Case (40 °F)	Rapid bacterial growth	CCP	Product below 40 °F	Measure record cooler air temperature every 4 hours	Adjust thermostat

FRIED CHICKEN

Frozen Chicken   Butter/Breading

Flowchart	Potential Hazards	CCP	Critical Limits	Monitoring Procedures	Corrective Actions
Receiving	Rapid bacterial growth; Spoilage; Contamination and Foreign objects	CCP	Chilled items below 40 °F; frozen items with no signs of thawing; No spoilage, Contamination and Foreign objects	Visual inspection; measure record temperature	Reject thawed frozen items; chilled items above 40 °F and items with spoilage; contamination or foreign objects
Store Frozen					
Thaw in Cooler	Incomplete thawing can case undercooking; Rapid bacterial growth		Thaw in cooler or under cold running water Chill to 40 °F after thawing	Observe thawing	Modify thawing practice
Butter/Breading	Contamination		Do not recycle used batter breading	Observe practice	Modify practice
Cook in Oil	Undercooking may not kill illness-causing bacteria		Internal temperature of 165 °F; Immediate transfer to hot hold after cooking	Follow time temperature instructions; measure record center temperature	Continue cooking until center temperature reaches 165 °F
Hold Hot in Steam	Rapid bacterial growth	CCP	Product above 140 °F; Hold batches less than 5 hours	Measure record case temperature every 4 hours	Reheat or chill
Chill in Cooler (40 °F)	Rapid bacterial growth	CCP	Product below 40 °F	Measure record cooler air temperature every 4 hours	Adjust cooler thermostat
Wrap/Label	Contamination		Avoid hand contact	Observe practice	Modify practice
Store in Cooler (40 °F)	Rapid bacterial growth	CCP	Product below 40 °F	Measure record cooler air temperature every 4 hours	Adjust cooler thermostat
Display in Case (40 °F)	Rapid bacterial growth	CCP	Product below 40 °F	Measure record cooler air temperature every 4 hours	Adjust use thermostat

E2. Sanitation

EGPC

2.1. Scope

This procedure applies to all food service employees involved in cleaning and sanitizing food contact surfaces.

2.2. Purpose

To prevent foodborne illness, ensure all food contact surfaces are properly cleaned and sanitized.

2.3. Definitions

2.3.1. Cleaning

Removes dirt, grease, and other contaminants from floors, walls, and equipment like microwaves and refrigerators.

But when it comes to any surface that touches food like preparation tables, utensils, and dishes, cleaning isn't enough, you must also sanitize.

This is because cleaning only removes visible dirt and food particles — pathogens that you cannot see can remain, even if a surface appears clean.

2.3.2. Sanitizing

Is the process that kills pathogens, reduces viruses or harmful strains of bacteria to safe levels and reduces them to safe numbers..

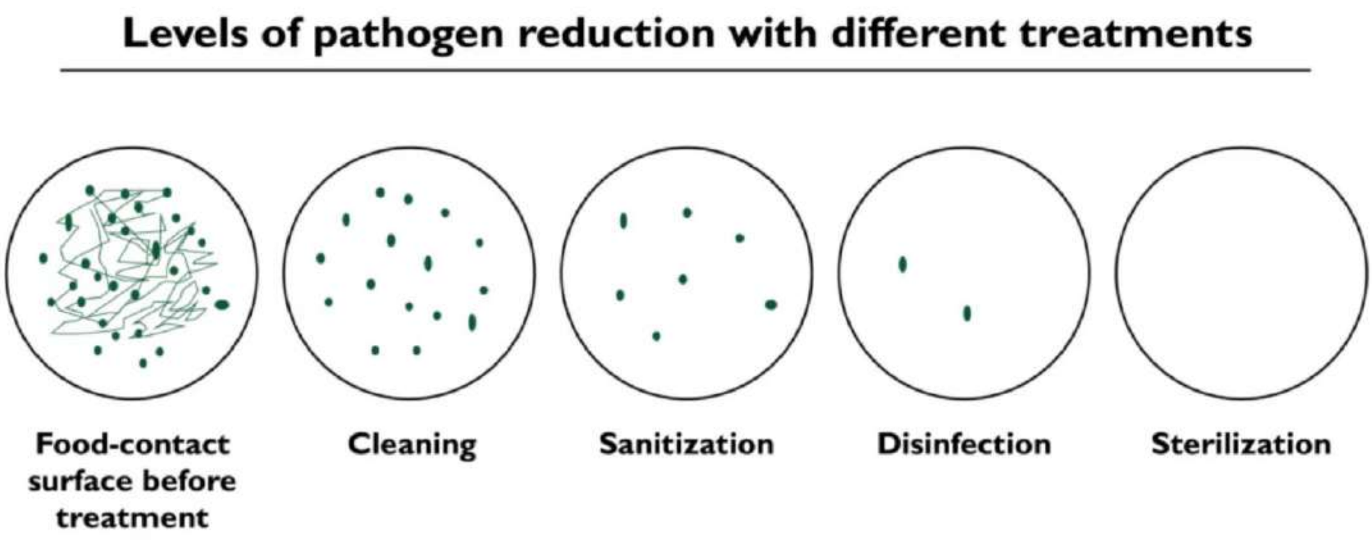
2.3.3. Disinfection

Kills most or all pathogens, and sterilization kills all pathogens.

Disinfectants and sterling products are more commonly used in healthcare settings like hospitals and nursing homes rather than in food service since they are not food-safe. That is why it can only be used for sickbay/clinic at rig camp/accommodation.

2.3.4. Sterilizing

Is the process of destroying all microorganisms, including bacteria, viruses, and fungi, from food contact surfaces. This is important to prevent foodborne illness, which can cause serious health problems.



2.4. Procedures

2.4.1. When and How to Clean and Sanitize Food-Contact Surfaces

Rig contractor or food-service employee must clean and sanitize food-contact surfaces whenever they become contaminated, such as:

- before and after working with food, especially raw animal products
- when switching tasks, such as between dicing chicken and chopping lettuce
- after taking a break, in case of contamination unknowingly occurs while you are away
- after four hours of use, since this is enough time for bacteria to multiply to harmful levels
- At any time during the operation, when contamination may have occurred.

Here's how to properly clean and sanitize food-contact surfaces (a three-compartment sink is preferable):

- Remove any loose or caked-on food particles.
- Scrub the surface using warm water (35°C [95°F] or hotter) and a detergent to remove stuck-on food particles, grime, and oils (in the 1st compartment).
- Rinse the surface with clean water (35°C [95°F] or hotter) to wash away any detergent residue (in the 2nd compartment).
- Following the directions on the sanitizer container, apply a sanitizing solution (in the 3rd compartment).
- Allow the surface to air dry in a self-draining position on approved, properly protected hooks or racks (never use a cloth or towel for drying since this can re-contaminate the surface).
- If a dish machine is used:
  - Check with the dish machine manufacturer to verify that the information on the data plate is correct.
  - Refer to the information on the data plate for determining wash, rinse, and sanitization (final) rinse temperatures; sanitizing solution concentrations; and water pressures, if applicable.
  - Follow the manufacturer's instructions for use.
  - Ensure that food contact surfaces reach a surface temperature of 160 oF (71 oC) or above if using hot water to sanitize.

You cannot sanitize a dirty surface so you must follow these steps in order to properly clean and sanitize a surface.

There are a few extra steps when it comes to cleaning and sanitizing stationary equipment like ranges, grills, hot-holding equipment, and microwaves.

To clean and sanitize stationary equipment, follow these steps:

- Unplug the equipment.
- Scrape or remove food from surfaces.
- Remove all removable parts and wash, rinse, and sanitize by hand or run through a dishwasher.
- Wash and rinse all food-contact surfaces you cannot remove.
- Sanitize the equipment surfaces and allow them to air-dry.
- Reassemble the unit.

However, you should still follow the manufacturer's guidelines for cleaning and sanitizing stationary equipment.

Wiping cloths are convenient for washing and sanitizing, but if you're not careful, you can pick up pathogens in your cloth and push them around, contaminating surfaces instead of sanitizing them.

2.4.2. Instructicons for food safety employees

- Don't reuse dry cleaning cloths that you use to wipe up food spills or anything else.
- Keep wet cloths used for sanitizing in the sanitizing solution between uses.
- Regularly check the sanitizing solution concentration using a test kit to ensure it's still effective.
- Don't use wiping cloths that you use to clean and sanitize surfaces that come in contact with

raw animal foods.
- Launder wet wiping cloths daily.

The boxes, baskets, and other receptacles in which food is transported, or stored, shall be maintained in good repair and kept free of accumulated dust, dirt, insects, rodents, and other contamination.

Exhaust fans, hoods, filters, grease trays, and ductwork are cleaned regularly to prevent a buildup of cooking grease and other flammable material.

2.4.3. Chemical Sanitizers Approved for Foodservice

The three main chemical sanitizers approved for food service include chlorine, iodine, and quaternary ammonium (QUATS).

They are considered food-grade or food-safe because, unlike a disinfectant, even if they come in contact with food, they're unlikely to make people sick.

Many factors influence the effectiveness and safety of sanitizers.

Some of these factors include:
- Concentration: Too low of a concentration won't effectively sanitize and too high of a concentration can be toxic.
- Water temperature: Sanitizers work best between 55°F (13°C) and 120°F (49°C).
- Water hardness: Higher water hardness can decrease the effectiveness of some sanitizers.
- Contact time: To effectively kill and reduce bacteria and other pathogens to safe levels, sanitizers must remain in contact with food-contact surfaces for 10–30 seconds.
- PH: Sanitizers tend to work better in more neutral environments rather than acidic ones.

Of these factors, concentration and water temperature are the most important to ensure proper sanitization and safety.

Use a test strip or kit to verify that the concentration for your chosen chemical sanitizer is correct.

2.4.3.1. Chlorine (Bleach)

Chlorine-based sanitizers are the most popular and widely used sanitizers in food service.

Sodium hypochlorite and chlorine dioxide are the active ingredients in chlorine-based sanitizers.

Chlorine sanitizers are less expensive compared with other sanitizers and are very effective in reducing bacteria to safe numbers.

The concentration of chlorine ranges from 25 to 100 parts per million (ppm) .

The minimum temperature required for chlorine solutions depends primarily on the concentration.

Concentration (ppm)	Minimum Temperature (pH ≤ 10)	Minimum Temperature (pH ≤ 8)
25–49	120°F (49°C)	120°F (49°C)
50–99	100°F (38°C)	75°F (24°C)
100	55°F (13°C)	55°F (13°C)

Chlorine-based sanitizers must remain on food-contact surfaces for at least 10 seconds to work effectively.

2.4.3.2. Iodine

Iodine is an effective sanitizer but it's more costly and less effective than chlorine, commonly used in the medical field to disinfect the skin prior to surgeries and to prevent wounds from becoming infected. And leave behind a reddish-brown stain that can be difficult to remove, especially from plastics, so they are better suited for surfaces less prone to staining like glass or stainless steel.

The concentration of iodine for sanitation is 12.5 to 25 ppm, should allow the sanitizer to remain on food-contact surfaces for at least 30 seconds to work effectively.

2.4.3.3. Quaternary ammonium (QUATS)

Quaternary ammonium "QUATS" is effective against a wide range of pathogens. Unlike other the other two sanitizers, QUATS leave a residue that provides short-term antibacterial effects after it dries.

The concentration for QUATS varies from 100 ppm to 400 ppm so read the label for dilution recommendations. And must remain on food-contact surfaces for at least 30 seconds.

QUATS bind to the fibers of a microfiber towel, which makes it less effective for sanitizing, so you should use a non-woven cloth if you aren't using a spray application.

2.4.3.4. Additional cleaners

While other food-safe sanitizers are available, it is crucial to adhere to the specific usage guidelines outlined on the EPA-registered label for each product to ensure optimal effectiveness.

- Peroxyacetic acid (PAA) — a mixture of acetic acid and hydrogen peroxide — is one example.
- PAA is primarily used during food production to sanitize food-contact surfaces and fresh fruits and vegetables.
- An all-purpose cleaner is not an approved sanitizer for food service.

Sanitizers work best when the surface is clean, but other factors determine their effectiveness.

Here's a quick look at the three chemical sanitizers approved for food service:

	Chlorine	Iodine	QUATS
Water temperature	Dependent on concentration and pH	68°F (20°C)	75°F (24°C)
Water pH	≤ 10	≤ 5	Dependent on manufacturer
Water hardness	Dependent on manufacturer	Dependent on manufacturer	≤ 500 ppm
Sanitizer concentration	25–100 ppm	12.5–25 ppm	Dependent on manufacturer
Sanitizer contact time	10 sec	30 sec	30 sec

Regardless of your chosen sanitizer, make sure to read the label closely before use.

The label will tell you what the water temperature should be, how much sanitizer to add, and how long the sanitizer should remain on the food-contact surface to be effective.

2.4.4. Guidelines for safe sanitizer use

Keep these guidelines in mind when working with sanitizers:

- Always read the chemical sanitizer label before use.
- Do not combine different chemical sanitizing solutions.
- Hold cloths in a pale containing the chemical sanitizer solution between uses. Wash daily.

- Keep cloths that come in contact with raw animal food separate from cloths used for other purposes.
- Change the chemical solution often and when visibly dirty.
- Label spray bottles containing sanitizers that are not in their original container so they are not mistakenly used for something different.
- Store sanitizers and other chemicals separately from food and items that may come in contact with food.
- Know where and how to access the safety data sheets.

Here are some common methods for applying disinfectants and sanitizers in accommodations and food preparation areas

2.4.4.1. Spraying:

Spraying is a common method for applying disinfectants and sanitizers. It is effective for covering large areas quickly and can be used on most surfaces. However, it is important to ensure that the spray is evenly distributed and that all surfaces are covered.

2.4.4.2. Wiping:

Wiping is a method that involves applying disinfectants and sanitizers to a cloth or paper towel and then wiping down surfaces. This method is effective for removing dirt and debris, as well as disinfecting surfaces. However, it is important to ensure that the cloth or paper towel is properly saturated with the disinfectant or sanitizer and that all surfaces are thoroughly wiped down.

2.4.4.3. Soaking:

Soaking is a method that involves immersing items, such as utensils and cutting boards, in a solution of disinfectant or sanitizer. This method is effective for disinfecting hard-to-reach areas. However, it is important to ensure that the items are properly submerged and that the solution is at the appropriate concentration.

2.4.4.4. Fogging:

Fogging is a method that involves using a machine to generate a fine mist of disinfectant or sanitizer. This method is effective for covering large areas quickly and can reach areas that are difficult to access with other methods. However, it is important to ensure that the fog is evenly distributed and that all surfaces are covered.

Note: It is important to follow the manufacturer's instructions for proper use and dilution of disinfectants and sanitizers, as well as to ensure that all surfaces are properly cleaned and sanitized. Additionally, it is important to wear appropriate personal protective equipment, such as gloves and masks, when applying disinfectants and sanitizers.

2.4.5. The hazards of Neglecting Proper Cleaning and Sanitizing Practices

2.4.5.1. Foodborne illness:

Failure to properly clean and sanitize food preparation areas and mess halls can result in the growth and spread of harmful bacteria and viruses, such as salmonella, E. coli, and norovirus. This can lead to foodborne illness and outbreaks that can affect the health and well-being of workers on the rig.

2.4.5.2. Cross-contamination:

Failure to properly clean and sanitize food preparation areas and utensils can result in cross-contamination, where harmful bacteria and viruses are transferred from one food item to another. This can result in the spread of foodborne illness and contamination of other food items.

2.4.5.3. Pest infestations:

Failure to properly clean and sanitize food preparation areas and mess halls can attract pests, such as rodents and insects, which can contaminate food and spread disease.

2.4.5.4. Non-compliance with regulations:

Failure to properly clean and sanitize food preparation areas and mess halls can result in non-compliance with regulatory guidelines and standards, which can result in fines and penalties.

Overall, it is important to prioritize the cleaning and sanitizing of food preparation areas and mess halls in drilling/workover rigs to prevent foodborne illness, cross-contamination, pest infestations, unsafe working conditions, and regulatory compliance issues.

2.4.6. Cleaning and sanitizing instructions

2.4.6.1. Accommodations, Living Areas, and Offices

- Regularly clean and disinfect all surfaces, including floors, walls, and furniture, using a disinfectant
- Provide hand sanitizing stations in common areas, such as dining halls and recreation rooms.
- Encourage workers to practice good hygiene, such as washing their hands frequently and using hand sanitizer.
- Ensure that bedding and towels are changed and laundered regularly.
- Keep a record of all cleaning and disinfecting activities, including the products used, date, and time.

Schedule:

- - Daily cleaning and disinfecting of high-touch surfaces, such as door handles, light switches, and bathroom fixtures:
  - Disinfect door handles, light switches, and bathroom fixtures.
  - Disinfect all high-touch surfaces, including tables, chairs, and countertops.
  - Clean and disinfect bathroom surfaces, including the toilet, sink, and shower.
  - Clean and disinfect the floors.

- Weekly deep cleaning and disinfecting of all surfaces:
  - Clean and disinfect all surfaces, including floors, walls, and furniture.
  - Clean and disinfect all bedding and towels twice a week.
  - Clean and disinfect all appliances.
- - Monthly deep cleaning and disinfecting:
  - Clean and disinfect all surfaces, including floors, walls, ceiling and furniture.
  - Deep clean and disinfect all furniture, including chairs, tables.
  - Deep clean and disinfect all carpets and rugs.
  - Disinfect air conditioning units and filters.
  - Apply pest control by competent person.

It is important to note that the schedule and checklist may vary depending on the size of the accommodations, the number of people using them, and the specific cleaning and disinfecting products used. It is also important to keep a record of all cleaning and disinfecting activities.

2.4.6.2. Food Preparation Facilities

- Regularly clean and disinfect all surfaces, including countertops, cutting boards, and utensils, using a disinfectant approved for food-contact surface.
- Encourage catering crew to practice good hygiene, such as washing their hands frequently and using hand sanitizer before handling food.
- Ensure that all food preparation areas are kept clean and free of debris.
- Store food properly to prevent contamination.

- A record of all cleaning and disinfecting activities shall be kept, including the products used, date, and time.
- Provide appropriate training and education to the catering crew to ensure that they understand the importance of sanitization and are equipped with the knowledge and tools necessary to maintain a safe and healthy work environment.

Schedule

- After each meal:
  - Clean and sanitize all surfaces, utensils, and equipment used during the meal.
  - Dispose of all food waste in a safe and hygienic manner.
  - Clean and sanitize all tables and chairs.
- Daily cleaning and disinfecting:
  - Clean and disinfect all high-touch surfaces, including tables, chairs, and countertops.
  - Clean and sanitize all kitchen equipment, including stoves, ovens, and grills.
  - Clean and sanitize all utensils, including pots, pans, and knives.
  - Clean and sanitize all food preparation surfaces, including cutting boards and countertops.
  - Clean and sanitize all sinks and dishwashing areas.
  - Clean and disinfect all floors.
- Weekly:
  - Deep clean and sanitize all surfaces, including floors, walls, and ceiling.
  - Deep clean and sanitize all kitchen equipment, including stoves, ovens, and grills.
  - Deep clean and sanitize all utensils, including pots, pans, and knives.
  - Deep clean and sanitize all food preparation surfaces, including cutting boards and countertops.
  - Clean and sanitize all sinks and dishwashing areas.
  - Clean and disinfect all floors.

It is important to keep a record of all cleaning and sanitizing activities.

2.4.7. Monitoring the cleaning and sanitizing process

Rig contactor Camp-boss & physician will continually monitor:

- During all hours of operation, visually and physically inspect food contact surfaces of equipment and utensils to ensure that the surfaces are clean.
- In a 3-compartment sink, on a daily basis:
  - Visually monitor that the water in each compartment is clean.
  - Take the water temperature in the first compartment of the sink by using a calibrated thermometer.
  - If using chemicals to sanitize, test the sanitizer concentration by using the appropriate test kit specified for the sanitizer used.
- In a dish machine, on a daily basis:
  - Visually monitor that the water and the interior parts of the machine are clean and free of debris.
  - Continually monitor the temperature and pressure gauges, if applicable, to ensure that the machine is operating according to the data plate.
  - For hot water sanitizing dish machine, ensure that food contact surfaces are reaching the appropriate temperature by placing a piece of heat sensitive tape on a small ware item or a maximum registering thermometer on a rack and running the item or rack through the dish machine.
  - For chemical sanitizing dish machine, check the sanitizer concentration on a recently washed food-contact surface using an appropriate test kit.
- Implementation of the mentioned cleaning and sanitizing schedule for Accommodations, Living Areas, Offices, and Food storing and Preparation areas.

2.4.8. Actions

- Retrain any food service employee found not following the procedures in this SOP.
- Wash, rinse, and sanitize dirty food contact surfaces. Sanitize food contact surfaces if it is discovered that the surfaces were not properly sanitized. Discard food that comes in contact with food contact surfaces that have not been sanitized properly.
- In a 3-compartment sink:
  - Drain, clean and refill compartments periodically and as needed to keep the water clean.
  - Adjust the water temperature by adding hot water until the desired temperature is reached.
  - Add more sanitizer or water, as appropriate, until the proper concentration is achieved, and verify with test kit.
- In a dish machine:
  - Drain and refill the machine at the end of every meal zone and as needed to keep the water clean.
  - Contact a direct supervisor (Camp-boss) to have the machine repaired (By maintenance team) if the machine is not reaching the proper wash temperature indicated on the data plate.
  - For a hot water sanitizing dish machine, retest by running the machine again. If the appropriate surface temperature is still not achieved on the second run, contact the appropriate individual(s) (maintenance team) to have the machine repaired. Wash, rinse, and sanitize in the 3-compartment sink until the machine is repaired or use disposable single service/single-use items if a 3-compartment sink is not available.
  - For a chemical sanitizing dish machine, check the level of sanitizer remaining in bulk container. Fill, if needed. “Prime” the machine according to the manufacturer’s instructions to ensure that the sanitizer is being pumped through the machine. Retest. If the proper sanitizer concentration level is not achieved, stop using the machine and contact the appropriate individual(s) (maintenance team) to have it repaired. Use a 3-compartment sink to wash, rinse, and sanitize until the machine is repaired.

2.4.9. Verification and record keeping by Camp-boss & rig physician

- Camp-boss will record monitoring activities and any action taken on the Food Contact Surfaces Cleaning and Sanitizing Log. The physician will verify that the required temperatures have taken and tested the sanitizer concentration by visually monitoring Camp-boss during the shift and reviewing, initialing, and dating the Food Contact Surfaces
- Dish machine temperatures are critical to ensuring equipment and utensils are properly sanitized.
- At the beginning of each meal, document the temperature of the rinse water in the dishwasher.
- If the final rinse water temperature is below 180 ° F (82°C) or above 195 ° F (90°C), notify the supervisor and document the action taken.
- Utensils are air-dried or they are stored in a self-draining position.
- Equipment and utensils are stored at least 6 inches (15 cm) above the floor to prevent contamination. They should be kept covered to protect from dirt and condensation.
- Glasses and cups are stored upside down in cleaned and sanitized racks.
- Cleaning and Sanitizing Log. The log will be kept on file for at least 6 months.
- The rig physician will complete the Food Safety Checklist daily.
- The Food Safety Checklist is to be kept on file for a minimum of 6 months.

E3. Minimum Medical Requirements

EGPC

3.1. Scope

The scope of the medical minimum requirements procedure encompasses all aspects of medical care, from patient care to administrative and operational functions.

3.2. Purpose

The purpose of MMRPs is to:

- Protect patient safety by establishing a baseline level of care, MMRPs help to ensure that patients receive safe and effective care from all healthcare providers.
- Improve the quality of care by helping to improve the overall quality of care by promoting standardization and consistency in practice.
- Reduce healthcare costs by preventing adverse events and improving patient outcomes, MMRPs can help to reduce healthcare costs.
- Promote accountability by helping to hold healthcare providers accountable for providing high-quality care.
- provide a framework for progress evaluation and improvement of medical practice ,encourage a culture of continuous improvement in the field of healthcare delivery and outcome

3.3. Procedure

3.3.1. Pre-employment Medical Check

Pre-employment medical assessments are a workforce risk management tool used to screen individuals for risk factors that may limit their ability to perform a job safely and effectively.

3.3.1.1. The Benefits of Conducting Pre-employment Medical Check Assessments

The benefits include a safer work environment, reduction in workplace injuries, minimized downtime, reduction in work cover claims and insurance costs, matching the capacity of the employee with the role, Early detection of health issues, legal compliance, and overall recruitment cost and risk reduction.

3.3.1.2. Components of Pre-employment Medical Examination

- Height, weight, body mass index (BMI)
- Cardiovascular examination (heart check, blood pressure, pulse)
- Full musculoskeletal examination including comprehensive range of movement
- Central nervous system examination
- Examination for hernias and other abdominal abnormalities
- Urinalysis for diabetes or kidney / bladder disorders
- Respiratory examination
- Vision assessment including color blindness

3.3.1.3. Other Specific Pre-employment Medical Examination Requirements

- Audiometry (hearing test, including Workover WA audio compliance)
- Spirometry (lung function test)
- Drug and alcohol testing (instant or laboratory)
- Work fitness assessments
- Periodic and exit medical assessments
- Statutory and code of practice screening
- Health surveillance screening (including hazardous substance monitoring)
- Blood tests
- radiological examination

3.3.2. Periodic Medical Examination (PME)

The root cause of Periodic Medical Examination (PME) is to follow the medical condition and status of the employees to ensure they perform healthy and effectively. It's a culture believing health is a pillar of work and life. It focuses on every (occupational) health damage risks concerning employees within your company. The examination looks at the lifestyle, work ability and health of your employees.

3.3.2.1. Periodic Medical Examination Covers

- Work-related risk factors (known as Risk Inventory and Evaluation (RI&E)).
- Personal health factors.
- Alerts issued by the company doctors.
- employee feedback and concerns
- chronic disease

3.4. Health Facilities

The facilities in the industry can be categorized into rig land clinics and company clinics. They must be provided with all sets, pharmaceuticals, and specialized doctors to deal with a wide range between minor and critical situations they have to face and overcome.

3.5. Land Rigs Clinic

Land rigs are remote and isolated places, and they require a dedicated team of medical personnel to provide healthcare for the workers. Doctor/medics who are working on oil rigs have to be able to provide general medical care as well as emergency medical services. They must be able to diagnose and treat a wide range of illnesses and injuries, and they must also be able to handle trauma and critical care.

Land rig doctor/medic should also provide medical care for workers who are suffering from the effects of isolation and confinement, such as stress, anxiety, and depression. They also have to provide preventive care and health training to the workers. Moreover, they have a responsibility to provide first aid training for catering staff members. They must also provide and present awareness sessions to the rig personnel at a weekly safety meeting.

Every doctor/medic needs wide-ranging medical skills, occupational health knowledge, and to be a highly qualified first aid provider. It is also important to have the expertise to provide trauma and medical care to injured and sick personnel on a rig, be able to operate and maintain a rig hospital/clinic ensure all emergency medical equipment is serviceable and rectify any deficiencies, and be qualified to liaise with local and international shore-based medical facilities.

Every doctor/medic should have a disease register and medical history for each employee. Employee medical history is divided into three components:

- Medical history sheet.
- Family medical subscription and claim.
- Sick leaves.
- immunization records
- chronic disease
- Biometric measurement
- Allergic and sensitivity

3.5.1. Clinic Specs

The Clinic should include:

- Ambulance bag
- Nebulizer

- Oxygen Cylinder
- Oxygen Regulator
- Sphygmomanometer
- Stethoscope
- Examination Bed
- Examination Lamp
- Stretcher
- Basin
- Glucose Measurement Device
- Otoscope
- Eye examination torch
- Digital Infrared thermometer
- Autoclave
- Oven
- AED (Automated External Defibrillator)
- ECG (Electrocardiogram)
- Suction Device
- Laryngoscope
- Incinerator
- IV stand
- Stainless steel medical instrument table
- Instrument dressing drum
- Pulse oximeter
- Weighing scale
- Anesthesia Ventilator
- Medical Patient Monitor
- 29-surgical tools
- Airway
- Safety Box
- first aid supply
- emergence eye wash bottles
- wound care supply
- wheelchair and mobility aids

3.6. Doctor/Medic Minimum Qualifications:

The doctor/medic’s minimum qualifications should include:

- B.Sc nursing/ Bsc. Medicine
- Certificate of Complete Training/Residency.
- License of profession from the ministry of health.
- advanced trauma Life support (ATLS)
- Advanced cardiovascular life support (ACLI)
- basic life support (BLS)

E4. FITNESS TO WORK REQUIREMENTS

EGPC

4.1. Scope

The scope of a fitness-to-work procedure encompasses the assessment and management of an employee's ability to perform their duties safely and effectively without posing a risk to themselves or others. It outlines the steps involved in identifying, evaluating, and addressing any health or safety concerns that may affect an employee's fitness for work.

4.2. Purpose

- Protect health and safety by protecting the health and safety of employees, customers, and visitors.
- Ensure job capability of employees to perform their job duties safely and effectively.
- Reduce disability risk and presentism.
- Prevent accidents and injuries.
- Manage and accommodate identified fitness concerns.
- Promote a culture of safety and health within the workplace.
- Enhance legal compliance.
- Return to work program

4.3. Procedure

4.3.1. Principle and designing of a fitness-to-work process

The principles of a fitness-to-work process are summarized as follows:

- Health Risk Assessments shall be carried out and it considers the base of this procedure, the outcome of any health risk assessment can be summarized as control measures which shall be applicable through all operations and all levels of the company.
- Medical examinations should relate to an assessment of fitness for a position with the reasonable (and foreseeable) health and capacity requirements for an employee in that position.
- Tests and examinations should produce repeatable and consistent results.
- Monitoring of sickness absence levels
- pre- employment assessment to ensure that the new hired person is fit for the specific demands of his roles

4.3.2. The outcome of fitness to work evaluations

A fitness-to-work evaluation should result in a clear statement to rig contractor's on the status of the employee. Typically, an employee may be regarded as:

- Fit for the assigned work/tasks and location
- Unfit for the assigned work/tasks and location

In the event of an individual being assessed as 'unfit', it is the responsibility of the organization to seek alternative employment for the individual, if possible and where appropriate. However, it is important to recognize that alternative employment may not always be possible, especially if the restriction relates to work in a particular geographical location.

Temporary or partial restrictions can be the cause of confusion and difficulty. The advice provided in a statement of fitness to work should be unmistakable, phrases such as 'fit for light work' should be specifically avoided, as they are meaningless in a practical and legal sense. The advice should state what tasks the individual can and cannot do, and for how long the restriction applies. Whether these restrictions can be accommodated by the organization is for the line management.

Transitional duties are a particularly useful means of rehabilitating an employee back to work after a period of illness or injury.

N.B. schedule follow-up assessment to monitor the progress of employees undergoing rehabilitation or alternative employment arrangements and adjusts the recommendations as needed

4.3.2.1. The consequences of fitness to work evaluations

An assessment of unfit for a position can have serious implications for the employees, from losing a position they hold to not getting one they are otherwise qualified for.

The organization will be asked to prove that the process of selection in a particular case is objective and within the law of that country.

The organization adopts all of the following measures as good practice, with the specific goal of reducing the personal impact on an assessment of unfit to work and shall be applied.

4.3.2.2. Accommodation

It is good practice to consider which of an individual's tasks might be assigned to others, thus permitting the individual to continue in the same position. The practicality of accommodating an individual in this way will, of course, depend on the task, for example, a roustabout who cannot work in the derrick, so he cannot be promoted to be a Floor man, who has to work on the derrick under some circumstances.

4.3.2.3. Transfer to alternative work

The incapacity of an individual to fulfill the needs of a particular position, the organization shall actively consider the options to transfer the individual to a more appropriate position if one is available.

4.3.2.4. Termination

The decision to terminate, not offer or modify employment for any individual is a matter for the line management. This should only be pursued after a careful consideration of the alternatives (i.e. accommodation and transfer to alternative work). This decision shall be taken after confirming that the employee is unfit to work regarding to a health problem that is not resulted from work related illness.

4.4. Fitness to Work Matrix

Schedule regular follow-up meetings with the employees who have the fitness to work assessment to assess their progress, address concerns, and make any necessarily required adjustments to the accommodation plan

	Drivers	Catering staff	DM/ FM	AFM/ RAF	AD/Driller/ NTP/STP/OIM	Maintenance Team/Barge engineer	Welders	Administrative Staff
Examination								
Pelvi-Abdominal U/S.								
Chest X-Ray.								
Visual acuity & color discrimination.								
Audiometric studies.								
E.E.G								
E.C.G. (Add stress ECG if needed).								
E.N. T consultation								
Orthopedic consultation								
Chest consultation								
Cardiac consultation								
Ophthalmic consultation								
General medical exam-ination and report								
Drug abuse test in urine								
Lab tests								
C.B.C								
E.S.R								
HBA1-C								
Lipide profile								
kidney functions								
Liver functions								
Alkaline phosphates								
S. ALBUMIN								
Thyroid functions								
prostatic functions								
Urine analysis & culture								
Widal test								
Throat swap & culture								
Nasal swap & culture								
Complete stool analysis & culture								
Hepatitis a marker.								
H.Bs ag								
H.C.V.P.C.R qualitative								

Section F:
Environmental Requirements

F1. ENVIRONMENTAL PROTECTION RESPONSIBILITIES

EGPC

1.1. Scope

This section of EGPC guidelines will be applied to all drilling and workover contractors working within the Egyptian Petroleum sector

1.2. Purpose

- The purpose of this Section is to define Egyptian Petroleum Ministry requirements for keeping all EGPC-affiliated rig contractors working in a safe environmental condition, in addition to, ensuring that all environmental Aspects produced by drilling and workover and its related activities are managed safely without causing harm to employees, public or the surrounding environment.
- These guidelines also provide information on the application and use of rig operators' HSE processes and systems to ensure that Environmental risks/Impacts associated with drilling and workover activities(Hazards /Aspects) can be identified, mitigated, and controlled to a level that is as low as reasonably practicable
- All environmental protection requirements defined in this section represent EGPC "minimum requirements" which cannot be or ignored.
- Under no circumstances EGPC requirements and scope should never be changed

1.3. Responsibility

1.3.1. EGPC/EGAS Drilling and Workover/HSE Dept.

- Responsible for ensuring that all requirements mentioned in these guidelines are carefully implemented through a predetermined Environmental protection plan
- Responsible for reviewing and updating the guidelines periodically.
- Responsible for assigning a special committee/ Departments from its affiliated companies to perform Auditing and updating this guideline
- Responsible for organizing a periodical meeting with rig contractors and related service companies aiming to enhance communication, improve statistics, deliver EGPC vision and sharing lessons learned.

1.3.2. Rig Operator's chairman of the board and Gen. Mgr.

- Responsible for ensuring that all requirements mentioned in these guidelines are carefully implemented
- support the implementation process of all HSE and environmental policies
- Responsible for providing strategic and operational financial support in achieving the organizational goals of providing high-quality, integrated health and personal social and Environmental protection services.

1.3.3. Rig Operator's Operations Gen. Mgr.

- Responsible for ensuring that all requirements mentioned in these guidelines are carefully implemented through predetermined acceptance audit and inspection
- Responsible to ensure that all rig working under his responsibilities are fully complied with EEAA requirements and EGPC drilling and workover guidelines

1.3.4. Rig Operator's Drilling Gen. Mgr.

- Responsible for ensuring that all requirements mentioned in these guidelines are carefully implemented through supporting the implementation of periodical audit plan
- Ensure all rig contractors and drilling team are adhering to all Egyptian environmental protection legislation and EGPC rules and regulations
- Ensure all rig contractors being complied with EGPC environmental protection requirements
- Responsible to ensure that all rig contractors working under his responsibilities are fully

complied with EEAA requirements and EGPC guidelines through performing several Audits and reviewing compliance reports and take all necessary action for full compliance with Environmental requirements

1.3.5. Rig Operator's HSE Gen. Mgr.

- Responsible for ensuring that all requirements mentioned in in these guidelines are carefully implemented
- Responsible for preparing a plan to Perform Environmental audit / inspection / walkthrough... etc. and Follow up the environmental activities using his Company specific Environmental protection review checklist which established based on EGPC Drilling and workover guideline
- Responsible for Assigning Rig HSE team for continues follow up all rigs operations and controlling its environmental impacts
- Responsible for assigning an appropriate concerned authority OR Approved qualified third party for performing Monitoring and measurement for all environmental aspects and its related impacts
- Ensure all rig contractors and drilling teams are adhering to all EGPC environmental protection rules and regulations
- Ensure all rig contractors comply with EGPC environmental protection requirements
- Responsible for ensuring that all rigs operating under his responsibilities are fully complied with EEAA requirements and EGPC guidelines through performing several Audits and reviewing compliance reports and take all necessary actions for full compliance with Environmental requirements .

1.3.6. Rig Contractors' Operations Gen. Mgr.

- Responsible for supporting the implementation of his company's environmental protection specific Audit /inspection plan issued by HSE departments at his company
- Responsible for ensuring that the environmental protection inspection Plan implemented through his respective Drilling and workover operations managers
- Responsible for issuing Clear instructions and commitments to all company-affiliated rigs to comply with EGPC Drilling and workover HSE guidelines and EEAA requirements
- Responsible to provide all financial support to all rigs under his responsibility by all Environmental protection, Training, equipment, Devices and other requirements that may support compliance with EEAA

1.3.7. Rig Contractor's Drilling and workover operations managers

- Responsible to follow up the implementation of the approved environmental Audit /inspection requirements and submitting the same to his respective Drilling and workover Superintendents
- Responsible to follow up the level of EEAA compliance within all rigs under his responsibilities and take all necessary actions to avoid any environmental violations

1.3.8. Rig Contractor's Drilling Superintendents

- Responsible for ensuring that All rigs under his responsibilities are complied with EGPC Drilling and workover HSE guidelines, environmental protection section and EEAA requirements
- Responsible to follow up the level of EEAA compliance within all rigs under his responsibilities and take all necessary actions to avoid any environmental violations
- Responsible to ensure that all environmental aspects and related impact are measured periodically through qualified persons supported with calibrated measuring devices or Assign an approved qualified third party to do such jobs
- Responsible to provide the required mandatory training for his affiliated rigs crews based on this guideline and EEAA requirements

1.3.9. Rig Contractor's Maintenance Superintendent

- Responsible to Ensure that All rigs under his responsibilities are complied with EGPC Drilling and workover HSE guidelines environmental protection section ,and EEAA requirements
- Responsible to follow up the level of EEAA compliance within all maintenance activities performed in all rigs under his responsibilities and take the necessary actions to avoid any environmental violations
- Responsible to ensure that all environmental aspects and related impact within maintenance activities are measures periodically
- Responsible to request the required mandatory training for his affiliated rigs maintenance crews based on this guideline ,environmental protection section and EEAA requirements

1.3.10. Rig Contractor's "PIC" Senior Tool pusher

- Responsible to Ensure that his rig is complied with EGPC Drilling and workover HSE guidelines ,environmental protection section and EEAA requirements
- Responsible to follow up the level of EEAA compliance within all activities performed in his rig and take the necessary actions and precautions to avoid any environmental violations
- Responsible to ensure that all environmental aspects and related impact are measures periodically
- Responsible to follow up and request the required mandatory training for his affiliated rigs maintenance crews based on this guideline and EEAA requirements

1.3.11. Rig Contractor's Chief Mechanic and Chief Electrician:

Responsible for assisting rig management on site by applying all Environmental protection requirements within maintenance activities and take all necessary precautions to avoid violation or environmental incident

1.3.12. Rig Contractor's site HSE

Responsible to follow up the implementation of the approved environmental protection plan and procedures and to Report all deficiencies to Rig Operator's HSE manager and Rig Superintendent through the official reporting procedures

F2. PLANNING REQUIREMENTS

EGPC

2.1. Scope

This section of EGPC guidelines will be applied to all drilling and workover contractorsworking within Egyptian petroleum sector

2.2. Purpose

- The Environmental Protection Plan Guidelines and Interpretation Notes will guide all rig operators and rig contractors on the development and maintenance of Environmental Protection Plans.
- These guidelines set out EGPC minimum requirements for the content of Environmental Protection Plans. Rig contractors may provide additional or different content, where that content is demonstrated to meet or exceed the same requirements for the protection of the environment.
- Environmental Protection Plans are used to Manage all drilling and workover activities without affecting employees , public and surrounding environment
- Where a conflict exists between the Guidelines and the EEAA, the EEAA are paramount.

2.3. Responsibility

It is the responsibility of Rig operator's /Rig contractor's management and work site supervisors to ensure that this standard is carefully followed.

2.4. Requirements

- Environmental Plan should serve as a reference document for all rig operations personnel so that they are aware of their responsibilities and what is expected of them concerning environmental protection
- Environmental Plan should include statements that describe its purpose and that demonstrate that the rig contractors understand the relationships between the Environmental Protection Plan and the operator's management system, the legal requirements, and the work to be completed.
- Environmental Plan should identify the specific drilling and workover aspects of the planned activities to which the Environmental Protection Plan will be applied,
- Environmental Plan should include the activities that fall within the scope of the drilling and workover operations and could include, as applicable, operations and activities related to pre-mobilization, mobilization, Rig up/Down, drilling/ Workover operations, third parties installation, and abandonment,
- The level of details included in an Environmental Protection Plan should be proportional to the complexity and Environmental impact of the proposed activity and should meet the requirements of EEAA approvals which provided by the rig operators and Concerned administrative authority
- Plan Shall contain sufficient detail and applicable method to allow rig contractors/operators to assess of the environmental protection measures associated with the proposed plan

2.4.1. Content of the Environmental Protection Plan

An effective Environmental Protection Plan should incorporate the following elements:

- Serve as a summary and reference document that describes, or provides a map to all environment-related processes, aspects, impacts, and documents.
- Should summarize and refer to the environmental management elements of the rig contractors' Management System that apply to the drilling and workover operations
- Shall address all of rig contractor's aspects of its planned work or activity that may have potential impacts on the environment, whether they are specifically identified in these guidelines or not
- It is not a stand-alone document and should refer to rather than duplicate detailed information

contained elsewhere in the rig contractor's management System.

- Should summarize and/or refer to the approved safe operating procedures and other operational documents that are to be implemented to ensure the quality of environmental protection
- Rig contractors are expected to identify hazards and to assess associated aspects and mitigation requirements on an ongoing basis throughout the full lifecycle of each project separately.
- The Environmental Protection Plan should summarize and refer to the applicable Management System elements in relation to environmental protection
- Should refer to the appropriate emergency plans and procedures and/or spill response plans(s) that would be implemented in such situations.
- Should refer to the Contractor's plans to test and exercise its emergency preparedness plans and response equipment.
- It must contain a list of all structures, facilities, equipment and systems critical to environmental protection and a summary of the system in place for their inspection, testing, and maintenance
- Summarize and reference the process for verifying "fitness for purpose" for environmentally critical items;
- Summarize and refer to the system in place for the inspection, testing, and maintenance of structures, facilities, equipment, and systems critical to environmental protection.
- Identifying the position(s) accountable for the Environmental Protection Plan includes indicating who within the company has responsibility and authority for its implementation, ongoing maintenance, performance monitoring, and continuous improvement.
- Should describe, at an operational level, how installation management and personnel will implement the Environmental Protection Plan on a day-to-day basis.
- Shall describe the Reporting relationships and structures for both management roles and supporting environmental protection staff functional roles, including contractor staff where applicable, are most easily understood when represented in organization charts.
- Shall clearly identify the processes for the treatment, handling, and disposal of waste.
- Shall include a description of the equipment and procedures for the treatment, handling, and disposal of waste material
- Should include the procedures for the temporary storage and management of wastes. The description should also include the procedures for classifying and separating waste streams, and for the handling, storing and transportation of the waste material.
- Shall describe the commitment toward providing sufficient number of trained and competent individuals who are available to complete the authorized work or activities and carry out any work or activity safely and without pollution

F3. Legislation requirements

EGPC

3.1. Scope

This section of EGPC guidelines will be applied to all drilling and workover rigs working within Egyptian petroleum sector

3.2. Purpose

- The Egyptian environmental protection laws that may apply to land drilling operations should be carefully studied to determine their impact and applicability to specific operations.
- The purpose of this part is to identify and records all applicable Egyptian Environmental statutes, rules and regulations and to issue a list of required environmental compliance documentations as an important part of the environmental protection plan.
- Legislations registers relevant to drilling & work-over operations aspects shall be issued and maintained at each rig site in order to fulfill all Egyptian environmental legislation

3.3. Mandatory required documentations

3.3.1. Official Environmental Permissions and Approvals

- EEAA approval for drilling wells "" Rig Operator responsibilities"
- Hazardous wastes handling permissions from the concerned administrative authority "Rig contractors Responsibilities "
- Hazardous material handling permission from the concerned administrative authority "Rig contractors responsibilities "
- WMRA registration for all wastes disposal contractors "Rig operators and contractors responsibilities Based on the contract holder company"

3.3.2. Required Registers and responsibilities

- Drilling /Workover Environmental Aspect and impact register "Rig operators and contractors responsibilities " Based on the type of activities "
- Drilling/workover Hazardous wastes registers "Rig operators and contractors responsibilities "Based on the type of activities "
- Rig Environmental register "Rig contractor's responsibilities"
- Rig Hazardous/Nonhazardous wastes registers" Rig contractor's responsibilities"
- Rig Hazardous materials register" Rig contractor's responsibilities"
- Rig Aspects monitoring Map" Rig contractor's responsibilities"
- List of the Environmental legislation and other requirements for rig operations aspects " Rig contractor's responsibilities"
- Required Contracts and responsibilities : -
- Nonhazardous wastes disposal Contracts" Rig contractor's responsibilities"
- Hazardous wastes disposal contracts" Rig contractor's responsibilities"
- Hazardous/Nonhazardous wastes transportation contracts "Rig contractor's responsibilities "
- Medical Wastes Transportation and disposal contracts" Rig contractor's responsibilities"
- Used oil transportation and recycle contract" Rig contractor's responsibilities"
- OBM transportation, disposal and treatment contracts "Rig Operators responsibilities"
- WBM transportation, disposal and treatment contracts" Rig Operator responsibilities"
- Dry location Contracts must include OBM transportation, disposal and treatment contracts" Rig Operators responsibilities"

3.3.3. Required Environmental protection various activities

- Rig contractors shall conduct a third party Annual environmental Monitoring and measurement based on rig contractor aspects map
- Rig contractors shall Obtain ISO 14001 "last version "for the environment management system
- Rig contractors shall Obtain Rig Operator approval for his own Environmental plan

- Rig contractors shall provide Environmental protection statistics reporting System
- Rig contractors shall Record all environmental aspects associated with a their activities and an evaluation of whether those aspects have or could have a significant impact on the environment

3.4. Procedures:

3.4.1. Permission and Approvals

3.4.1.1. EEAA approval for drilling wells

- It is Rig Operators responsibilities and accountability under the Egyptian Environmental laws to Issue an EIA study through EEAA approved consultants
- EEAA will review the study to ensure whether the impact assessment reports have adequately assessed in order to get the EEAA approvals
- Rig Operator is fully accountable to apply all EEAA approval terms and conditions
- It is the Rig Contractors duties and responsibilities to comply with rig operators EEAA approval terms and conditions under full supervision from the rig operators Operations and HSE departments
- Rig Operators Shall use Specific Environmental protection checklist to ensure that the rig contractors are fully complied with the environmental requirements mentioned in this guideline

3.4.1.2. Hazardous wastes handling permissions

- It is Rig Operators/ Contractors responsibilities /accountability to issue such permissions and license under the Egyptian laws
- Permits for handling Hazardous Wastes must be obtained from the concerned Administrative authority,
- It is Rig Contractors responsibilities to ensure that the Rig site meet the permit conditions to be granted the hazardous wastes handling process.
- The permit would be issued for a Specific period which can be renewed.
- The permit can be suspended by the granting body in cases of occurrence of environmental violations or breaching one of the permit conditions

3.4.1.3. Hazardous material handling permission

- It is Rig Operators/ Contractors responsibilities /accountability under the Egyptian laws
- Permits for handling hazardous materials must be obtained from the concerned Administrative authority,
- The Rig site must meet the permit conditions to be granted the handling process.
- The permit would be issued for a Specific period which can be renewed.
- The permit can be suspended by the granting body in cases of occurrence of environmental violations or breaching one of permit condition

3.4.1.4. Waste Management Regulation Authority “WMRA” registration for all wastes collection and disposal contractors

It is the responsibilities of both Rig contractor and operators to ensure that all Wastes collections, treatment and disposal contractors have been registered in Waste Management Regulation Authority “WMRA” and have WMRA licenses/ approvals/ permits for the activities related to waste and hazardous Wastes, which should be issued by the Waste Management Regulatory Authority electronically.

3.4.2. Required Registers and responsibilities

3.4.2.1. Drilling /Workover Environmental Aspect and impact register

It is a rig Operator responsibility to identify all drilling and workover and service company’s environmental aspects and its impacts that may affect the surrounding environment and its control measures, all this information must include in the Rig operators aspect and impact register

3.4.2.2. Rig Environmental Aspects and impact register “” Rig contractor’s responsibilities”

It Is a rig contractor responsibility to issue a complete detailed register including all environmental aspect related to drilling and workover activities that interacts or can interact with the environment” and an impact as a “change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization’s environmental aspects. “Associated with its control measures

3.4.2.3. Drilling/workover Hazardous wastes registers “” Rig Operator responsibilities”

It is rig operator’s responsibilities to identify, issue and maintain an updated hazardous wastes register as a legal requirements including all rig operators related Hazardous wastes which generated through Drilling and workover activities Such as, Oil Base Mud (OBM), Water Base Mud (WBM), Mud chemicals containers…etc

3.4.2.4. Rig Hazardous wastes registers

It is rig Contractor’s responsibilities under the Egyptian environmental laws to identify, issue and maintain an updated hazardous wastes resister as a legal requirements including all rig contractors related Hazardous wastes which generated through Drilling and workover activities Such as Used oil, used filters, rags , Batteries …etc.

3.4.2.5. Rig Environmental register “” Rig contractor’s responsibilities”

It is rig Contractor’s responsibilities under the Egyptian environmental laws to identify, issue and maintain an updated environmental registers based on the EEAA guidelines forms and instructions for each unit, including but not limited to , General information , Unit description , Input and output , Hazardous and nonhazardous wastes , wastes Transportation and disposal contracts , Environmental measurements

3.4.2.6. Rig Hazardous materials register

It is rig Contractor’s responsibilities under the Egyptian environmental laws to identify, issue and maintain an updated hazardous Materials resister as a legal requirements including all rig contractors / Operators related Hazardous Materials which may be used through Drilling and workover Operations.

3.4.2.7. Environmental Aspects monitoring Plan

It is rig Contractor’s responsibilities under the Egyptian environmental laws to prepare and apply Environmental aspect monitoring plan, the purpose of this plan is to regroup into one document the monitoring and follow-up programs

Required to track potential effects of the drilling and workover activities on the receiving environment. The Plan focuses on monitoring and reporting information to rig operator top management for improvements including but not limited to, Air quality, noise, light intensity, Humidity…etc.

3.4.3. Required Contracts and its responsibilities

3.4.3.1. Non-hazardous wastes disposal Contracts

- It is rig Contractor’s responsibilities to contract with EEAA approved contractors for nonhazardous wastes disposal
- Rig operator have to ensure that rig contractor have always valid nonhazardous wastes disposal contracts
- Rig operator Rep. have to ensure that rig contractor have disposal register supported with safe disposal manifest
- Rig operator Rep. have to ensure that rig contractors have WMRA registration and licenses

3.4.3.2. Hazardous wastes disposal contracts

- It is rig Contractor's responsibilities to contract with EEAA approved contractor for hazardous wastes disposal
- Rig operator have to ensure that rig contractor have always valid hazardous wastes disposal contract
- Rig operator Rep. have to ensure that rig contractor have hazardous wastes disposal register supported with approved/Stamped official manifest.

3.4.3.3. Hazardous/Nonhazardous wastes transportation contracts

It is rig Contractor's responsibilities to contract with EEAA approved contractor for hazardous wastes transportation contractors

Rig operators Rep. have to ensure that rig contractors have always valid hazardous wastes transportation contract and WMRA registration

3.4.3.4. Medical Wastes Transportation and disposal contracts

- It is rig Contractor's responsibilities to contract with approved contractors/Hospitals for medical wastes disposal
- Rig operator have to ensure that rig contractor have always valid medical wastes disposal contract
- Rig operator rep. have to ensure that rig contractor have medical wastes disposal register supported with updated manifest

3.4.3.5. Used oil transportation and recycle contract

- It is rig Contractor's responsibilities to contract with EEAA approved contractors for used oil transportation and recycle services
- Rig operators have to ensure that rig contractors have always valid used oil transportation and recycle services contracts
- Rig operator Rep. have to ensure that rig contractors have used oil transportation and recycle register supported with updated approved /stamped manifest

3.4.3.6. OBM transportation, treatment and disposal contracts" Dry location services

- It is rig operator's responsibilities to contract with EEAA approved contractors for OBM transportation, treatment and disposal
- Rig Operators have to keep copy of the OBM transportation, treatment and disposal contracts and updated manifest in its recordkeeping system at the rig site

3.4.3.7. WBM transportation, treatment and disposal contracts

- It is rig operator's responsibilities to contract with EEAA approved contractor for WBM transportation, treatment and disposal and to Keep a copy of valid contract at the rig site
- Rig Operators have to keep copy WBM transportation, treatment and disposal, and keep an updated manifest in its recordkeeping system at the rig site

3.4.4. Environmental Miscellaneous Activities

3.4.4.1. Environmental Monitoring and measurement

- It is the responsibility of rig contractors to perform Annual Environmental monitoring and measurements to observe an environment characterize and its quality, and establish environmental protection parameters, for the purpose of accurately quantifying the impact of the their activity on the surrounding environment.
- Results of monitoring and measurement will be gathered, analyzed statistically, and an appropriate corrective/preventive actions must be taken for improvement , All contractors shall keep an updated records for their monitoring and measurement reports and related correctives

actions supported with closeout evidences or contractors closeout plan
- Environmental Monitoring and measurements activities must be performed periodically by the rig contractors and annually by EEAA approved third party
- Analysis and statistics and improvement plan taken based on monitoring and measurement reports must be kept in place with evidences all the time

3.4.4.2. Environmental Management system ISO 14001 “last version “

All rig Contractors working under Egyptian petroleum sector authority must obtain ISO 14001 for managing the environmental systems with latest requirements version

Note: This item is mandatory required by EGPC for both Rig operators and contractors

3.4.5. Wastes / Chemicals yard requirement

- It is the responsibility of rig contractors to identify several specific safe areas for chemicals yard, hazardous wastes yard, recycle wastes, Junk yard, paints, etc. as follow
  - Hazardous wastes accumulation areas including recycled hazardous wastes
  - Nonhazardous wastes accumulation area including recycled non-hazardous wastes
  - Mud Chemicals yard
  - Rig chemicals yard/ storage including “paints, Lube oil, Hydraulic oil ...etc.
  - Junk accumulation area “follow up register must be kept up to date “
- All these areas are considered temporary holding of waste/chemicals pending
- storage /treatment or disposal
- Rig contractors shall provide an appropriate storage methods include containers,
- Tanks, waste piles, and surface impoundments for each area
- Storing waste materials incorrectly can be dangerous, even fatal, with the potential

Of causing leaks, fires, or environmental contamination. To protect the environment while continuing to encourage recycling hazardous waste, therefore, all wastes storage areas must meet all EEAA and civil defense requirements

Environmental plan must include Hazardous, non- hazardous wastes and material On-site temporary storage procedures and must include but not limited to the following:
- Wastes generation source
- Quantity per specific period “Monthly /annually “
- On-site Storage Time Limits
- Maintain Spills and Leaks
- Secondary Containment Storage
- Incompatible Wastes Segregation
- Safe, Accessible Container Storage
- Properly Seal Waste Containers
- Personnel Safety Training
- Competency requirements for dealing with hazardous wastes and materials
- All waste must be disposed of within 6 months of accumulation to decrease safety risks.
- site storage time
- Temporary storage area layout
- Firefighting equipment

Hazardous wastes register must include all hazardous wastes related information including but limited to the following:
- Waste type
- Source of wastes generation
- Quantities per year “ Specific period “
- Temporary Storage location ”onsite“
- Packing and storage method
- Onsite temporary Storage period

- Treatment method
- Disposal method
- Transportation and disposal contracts
- Disposal follow up method
- Wastes MSDS availability

3.5. Hazardous / Nonhazardous wastes register Form

Type of dangerous waste	Source of waste	Amount (year)	Storing location	Packing method (barrels-tanks-etc..)	Collection/storage period	Method of handling	Method of Conjugation	Method of transporting waste	Organizations that handle waste	Is there a plan to trck the wastes		Is there An MSDS available for the chemicals	
										Y	N	Y	N

F4. Wastes, Excess and Reusable Material

EGPC

4.1. Scope

This chapter of section 6 of EGPC guidelines will be applied to all drilling and workover rigs working within the Egyptian petroleum sector to promote the concept of environmental protection to all its employees, and to provide guidance as to individual and collective responsibilities in this area of activity.

4.2. Purpose

This part of EGPC D&WO HSE Guidelines is defining the steps to be followed to properly process waste, reusable materials, and recyclable materials returning from all Drilling and Workover activities, in an effort to prevent degrading the environment, reduce hazardous and nonhazardous waste volumes, as well as promote reuse and recycling.

4.3. Definition

The environment is defined as the air, water, and land around the company's workplaces, facilities, and other activities.

4.4. Responsibilities

4.4.1. Rig operators Drilling Manager

- Responsible for the implementation of this procedure in its entirety
- Develop and implement an audit program that will accurately record and identify the level of implementation of this procedure.
- Ensure that all internal and corporate audit non-compliances regarding these requirements are addressed and resolved within the time allotted for closure of such findings.

4.4.2. Drilling & Workover superintendent

- Responsible to ensure the implementation of this procedure
- Responsible to develop an audit program that will accurately record and identify the level of implementation of this procedure.
- Ensure that all internal and corporate audit non-compliances regarding these
- requirements are addressed and resolved within the time allotted for closure of such findings.

4.4.3. Drilling & Workover supervisor

- Ensure waste is segregated properly onsite and that it is handled in compliance with this procedure's requirements and all applicable governmental and Egyptian regulations and standards.
- Ensure trash is properly segregated as per this procedure, and sent directly to the landfill (from onshore rigs).
- Ensure any recyclable or reusable materials are sent for further processing.
- Track and document the receipt/disposal of rig operators materials and wastes removed from the rig to their final destination.
- Ensure an effort is made to reuse materials from damaged bags and containers at the rig site.
- Ensure drilling contractors are implementing their contractual requirements as contained in their contract approved.

4.4.4. Rig Contractor/Sub contractors

The contractors have the responsibility for ensuring;

- All subordinates are aware of potential hazards to the environment.
- All operation is carried out in accordance with statutory and Company requirements with fully compliance with EGPC drilling workover manual requirements
- Subordinates are aware of their individual responsibilities for protecting the environment.

- All incidents causing or having the potential for causing damage to the environment are investigated and reported as per the approved reporting procedures
- Spill control measures shall be in place based on the environmental protection plan rig operator's requirements
- Maintain records of waste manifests for hazardous and non-hazardous wastes transportation, treatment and disposal.

4.5. Requirements

4.5.1. Environmental Preventive Measures

- Environmental preventive measures will largely depend on control practices through work programs, regular briefings on the environment and most of all on site supervision.
- Effective supervision of the D&OW operations is crucial for ensuring proper implementation of the contractor's environmental responsibilities and environmental preparedness measures.

4.6. Rig Components and Equipment

For drilling and workover operations and service companies the following preventive measures should be considered where relevant:

4.6.1. Drilling Fluid

- Adequate storage facilities for mud components must be provided.
- Preventive maintenance of mud pumps must be implemented and audited periodically
- Proper runoff system on shale shakers must be installed.
- Monitoring devices for the mud system should be periodically calibrated and tested.
- Mud chemicals should be properly stored, handled and disposed in accordance to applicable regulatory requirements.
- Drainage channels/ditches shall be provided around mud pumps and storage tanks to direct excess fluid or spills to the reserve or waste pit as appropriate.
- Centrifugal pump gland packing fluid to be directed to a drainage sump/channel or ditch
- Rig floor drains should be directed to the cellar or a waste tank and fluid transferred to reserve pit
- All chemical or drilling fluid spills will be cleaned up immediately by qualified team at each rig
- All drilling fluid chemicals will be stored in a designated area and chemicals separated as recommended by the qualified Mud Engineer
- When cleaning/flushing cement units and/or similar equipment fluid should be directed to the approved reserve pit "constructed in accordance with EEAA requirements " Based on the EEAA approval

4.6.2. Chemicals

- Fuel storage tanks should be kept relatively close to the generators.
- Records should be kept for all chemicals stored or used on site.
- As part of waste minimization measures, unused chemicals should be returned to supplier wherever possible.
- Unused chemicals drums should be cleaned and rendered useless to prevent reuse.
- Frequent checks should be made to ensure the integrity of containers, storage facilities and handling practices.
- All waste oil/fuel and/or cleaning fluids shall be transferred to a waste oil tank or drums for ease of removal from location for disposal
- All engine skids and mechanical equipment/pumps shall be fitted with sumps or containment to allow drainage to a suitable container for transfer to the waste oil tank
- Drip/catchment trays shall be used during the repair of mechanical/hydraulic equipment
- Drip/catchment trays shall be used during such operations as cleaning casing/tubulars and the

fluid transferred to the waste tank
- All diesel outlets shall be fitted with a 'deadman' fuel dispensing nozzle
- All oil tanks/drum racks shall be fitted with drip pan/sumps and the drums equipped with taps or transfer pumps
- Fuel transfer pumps shall be suitably bund wall /contained to prevent spills/gland packing leakage during operation " Bund wall or equivalent shall be calculated Based on NFPA requirements

4.6.3. Handling of Waste

- The various types of wastes that return from the rigs and those that are used in D&WO facilities, including all classes of waste, reusable and recyclable materials, must be handled as set out in this document.
- The goal is to reduce hazardous and nonhazardous waste volumes, promote recycling, and reduce the transport costs.
- Rig contracts shall be audited to ensure that the responsible parties for various worksite waste streams are identified, and a waste management plan is established.
- The responsibility for all waste streams associated with all well activity at a worksite is the operators responsibilities, such as mud cutting, chemicals containers ...etc.
- In the execution of the work contract, all wastes must be disposed based on the Egyptian applicable regulations must be observed.
- Waste management under the work contracts, regardless of responsible party, shall meet the following minimum EGPC requirements standards
- Clean up equipment and absorbent material will be available at the work site (spill kit)
- Specific wastes disposal contracts must be provided in place and valid
- Wastes disposal contractors must be approved from the EEAA and has EEAA approval matched with company activities

4.6.4. Oil Base Mud

When using oil base mud, a contingency plan should be prepared by the rig operators/contractors giving consideration to:

- Dry location equipment integrity
- Appropriate Containment bunds
- Surfacing of the immediate rig location
- Lining of reserve pits based on the EEAA requirements and approvals
- Lining of channels/ditches based on the EEAA requirements and approvals
- Provision of spill containment equipment e.g. Vacuum pumps, absorbent material
- Provision of rig floor drip and/or directing of drains to a holding/transfer tank
- Provision of mechanical seals on centrifugal transfer pumps
- Disposal of OBM cutting at approved EEAA contractors and Permitted by WMRA

4.6.5. Treated Sewage

- Generated sewage shall be treated through a sewage treatment unit before it is released to the environment.
- Treated sewage water shall be tested to ensure it does not contaminate the surrounding area or underground water based on the applicable Egyptian laws.
- When practicable, treated sewage water shall be piped to the nearest drainage system (open or closed).
- In the absence of a drainage system, the rig(s) equipped with sewage treatment units shall dispose of treated sewage into a waste pit which shall be vacuumed by vacuum trucks through EEAA approve contractors " valid contracts shall be in places supported with stamped manifest

4.6.6. Untreated Sewage

- Sewage waste pit shall be at least 30 meters from the main camp.
- Untreated sewage shall be disposed of into lined waste pits "based on the EEAA requirements "which shall be vacuumed by vacuum trucks" valid contracts shall be in places supported with stamped manifest When vacuuming the waste pit is not an option, untreated sewage can also be disposed of to waste pit lined by plastic to prevent infiltration reaching the underground water and be left to dry.
- Plastic linen and waste residues to be collected once pit has dried out.

4.6.7. Domestic Wastes

- Covered bins should be provided for refuse and litter.
- Waste bins shall be covered all the time and emptied regularly.
- An authorized garbage collector shall be contracted to transport domestic waste to the nearest authorized land fill (as/when practical).
- Domestic waste shall be logged e.g. load, date, vehicle details shall be manifested and shall be disposed through EEAA approved contractors

4.6.8. Clinical Waste

- Clinical waste shall be collected separate from other domestic waste.
- Clinical waste shall be wrapped/secured firmly and shall be transported off the location via an approved contractor to the nearest designated medical facility.
- Needles shall be crushed or burned to prevent infection.
- Expired medicine shall be collected and sent back to the rig contractor medical department with official receiving manifest.
- Clinical waste shall be logged e.g. load, date, vehicle details shall be manifested.

4.6.9. Hazardous Wastes

- Used oil shall be collected in oil drums by a designated waste disposal contractor.
- Oil drums used for disposal of used oil shall be sealed to prevent spillage.
- Batteries and contaminated filters shall be collected and picked-up by a designated waste disposal contractor.
- All shipments shall be recorded.
- Truck driver shall have a shipment manifest, which should describe shipment type, weight, number of units and final destination.

4.6.10. NORM Waste

- NORM contaminated equipment removed from the wells during work over by services contractors (pipeline, cables, ESP..etc ....) which will not be re-run, shall be collected from the well location.
- Rig operators PIC at rig site "DSV" Shall inspect the equipment using the Norm survey meter
- If the equipment greater than 0.5 μSv/h is considered NORM contaminated
- The equipment may need to be transported to Rig Operator Specific yard or approved contractors yard for further checking
- If the double check of the equipment indicated that NORM contamination, the equipment shall transport to the approved third party decontamination NORM yard

4.6.11. Land Restoration

- The fundamental principal to site restoration is to return the location to as near possible to its original condition.
- Residual contamination or situations of potential future impairment should be eliminated.

4.6.12. Well and Cellar Area

- Rubbish pits, burn pits and excavations for sewage should be backfilled and
- restored to the original condition using local equipment of the rig contractors/Operators based on their contract " it is the accountability of rig operators ".
- All litter and other waste should be collected from site and access way and
- Disposed off.
- Small hydrocarbon and salts spills should be cleaned up by removal or dilution with fresh water or clean sand.
- Large spills must be collected and disposed of offsite.

4.6.13. Camp Site

- Rubbish and sewage pits, drains, etc. should be backfilled in such a way as to restore as nearly as possible to the original condition.
- Heavily compacted area should be ripped to facilitate infiltration and re-vegetation when relevant.
- All Rig Operators and Rig Contractors operations mangers are responsible for ensure that an environmental review is conducted prior to commencement of new work activities
- All applicable Egyptian Environmental laws and regulations and Contractual obligations must be identified and complied with
- All Potential pollution hazards shall be identified and all prevention measures shall be addressed in each rig contractors environmental plan
- The environmental review shall identify all necessary equipment to be purchased and appropriate training to be provided.

4.6.14. Chemical storage areas

Chemicals Storage area will be kept clean, spills removed and broken sacks repacked

4.6.14.1. Sewage

Camp/accommodation sewage/waste water systems will observe local requirement

4.6.14.2. General Waste

To allow appropriate decisions to be made as to final disposal it is recommended that waste materials are segregated into separate containers for the following waste streams where required:

- Scrap metal
- Steel offsets, machinery parts etc.
- Combustible Waste such as Wood, Plastic, etc.
- Accommodation waste such as Food Scraps etc.
- Hazardous waste such as Paint cans, Chemical drums/sacks etc.

4.6.14.3. Disposal

- Responsibility for waste continues beyond the rig contractor's worksite.
- Waste transport and disposal shall observe prevailing regulatory requirements.
- Rig operators are fully accountable for safe disposal of all generated wastes

4.6.14.4. Fuel Transfer

- Receiving of fuel shall be completed under the direction of the Rig Senior Mechanic or qualified designate.
- The Mechanic shall measure the fuel tank levels before receiving fuel.
- The Mechanic shall ensure that all hoses are correctly fitted and that all the valves in the line are correctly aligned to receive fuel.
- The Mechanic shall inspect the fuel truck pump and hoses for damage or leaks before transfer commences.

- The Mechanic shall ensure that the fuel tank skid, pumps, fuel truck and pumps are adequately earthed/grounded before transfer begins.
- All hose fittings and connections shall be examined for leaks or damage as the transfer begins.
- At completion of transfer the Mechanic shall ensure that all valves have been realigned to operating position for the system.
- The Mechanic shall supervise the disconnecting of the hoses ensuring that any residual fuel in the hoses is contained and NOT spilled to ground. Stored hoses shall be plugged or capped.
- The Mechanic shall measure the fuel tanks immediately after receiving the product and confirm quantities with the manifest

4.7. Spill Control and Procedure

All spills of any substance will immediately be reported to a Supervisor. The following is required for response to a spill:

4.7.1. Spills easily contained

Immediate line Supervisor will organize personnel to respond as necessary.

4.7.2. Spills requiring assistance

- Alert Senior Toolpusher and main Office; Enlist assistance of additional crew members; Obtain Spill Equipment, including Absorbent, bundling, etc; Dispose of cleanup materials as per local requirements/regulations

F5. Air Emissions Control

EGPC

5.1. Purpose

The Drilling and Workover (D&WO) Air Emissions Control procedure defines the minimum requirements to be implemented to control the air emissions within drilling and workover operations.

The procedure also provides the guidelines to be followed by rig contractors to generate, implement and manage their standalone air emissions control procedures comply or exceed EGPC guideline in this regard.

5.2. Scope

This procedure applies to all EGPC/EGAS-affiliated Drilling and workover operations

5.3. Air Pollutants

Air pollutants are classified as follows:

5.4. Primary pollutants

This classification represents pollutants that are released directly into the air in harmful forms.

5.4.1. Secondary pollutants

This classification refers to pollutants that are modified into hazardous forms due to chemicals reactions in the atmosphere.

Both primary and secondary pollutant emissions can occur as a result of Drilling and Workover operations and can be attributed to planned or unplanned gas and liquid flaring operations, power generation and vehicles utilizing internal combustion engines. The various types and sources of these air pollutants have been identified and summarized in Table below:

5.4.1.1. Types and Sources of Air Pollutants

Activities/Sources	Air Pollutants/GHGs
Planned or unplanned gas and liquid flaring operations	Carbon Dioxide,Carbon Monoxide , SOx, NOx , PM (Particulate Matter) , Hydrocarbons (CH_4)
Engines' (power generators and vehicles) fuel combustion	Carbon Dioxide , Carbon Monoxide , SOx, NOx , PM (Particulate Matter) , Hydrocarbons (CH_4)

5.5. Responsibilities

5.5.1. Rig operators and Rig contractors

- Rig Operators and contractors shall comply with EGPC air emission control requirements
- Rig Operators and contractors shall Implement an applicable technologies to meet the
- Requirements such as zero discharge technology, to minimize flaring/emissions.
- Rig Operators and contractors shall ensure that all hazards /aspects and risks /impacts associated with their source of emissions are identified, assessed and mitigated and emergency response plans developed.
- Rig Contractors shall ensure that work sites/facilities that are classified as large sites develop, document and implement an Engine Emission Management Program.
- Rig Contractors shall adhere to the air pollution mitigation procedures described in their environment management programs

- Rig contractors shall develop and implement an Engine Emission Management Program.
- Rig contractors shall ensure periodic preventive maintenance programs are in place and implemented to all rig equipment and service companies in order to minimize environmental releases of air pollutants and GHGs.
- Rig Operators and contractors shall verify existence and implementation of contractors' Engine Emission Management Programs during inspection/ audit.

5.6. Standard and requirements

5.6.1. Flaring Requirements

- Flaring and burning of hydrocarbon gases and liquids at rig sites is a significant source of air pollutants and GHG emissions.
- Emissions of air pollutants and GHGs generated from flaring can be minimized and controlled by proper design and/or control of the flare system/equipment (e.g., elevated flare stack, high-efficiency burner, etc.);
- Air quality and source emission control recommendations from applicable Environmental Impact Assessment (EIA) studies and/or technical and environmental evaluation shall be implemented by the Rig contractors and operators
- All equipment shall be operated in accordance with manufacturer's recommendations.
- The preventive maintenance and repair of all rig equipment, including replacement in-kind, shall also be in accordance with the manufacturer's recommendations.
- Diesel Engine Emissions Management
- Fuel combustion systems utilized to support D&WO operations for either power production or mechanical use produce air pollutants and GHGs.
- Air pollutants are emitted through engine exhaust. Some organic compounds (VOCs) can escape from the crankcase as a result of blow-by and from spills/leaks from fuel tanks and carburetors.
- Control measures shall primarily be directed at limiting excessive emissions of pollutants (Sox NOx, CO, PM, and GHGs (CO_2, CH_4)) from engine exhausts.
- Emission limits for mobile diesel (compression-ignition) engines are specified by the Egyptian environmental laws.
- Emission limits for individual pieces of equipment such as diesel generators on drilling / workover locations used onshore and outdoors must be identified based on the Egyptian applicable laws and regulations and can't be exuded

5.6.2. Engine Emission Management Program

Rig contractors on the entire sites including (i.e., rig equipment, rig camp, main camp, etc.) must develop an internal engine emission management program. The engine emission management program will include the following:

- A list of all engines with serial number, size, make, model, year of manufacture and any other relevant information.
- An engine preventative maintenance procedure including description of mandatory preventative maintenance.
- Potential hazards and emergency response procedures.
- All engine emission management program documentation, Plan and records shall be organized and available upon request at rig contractors units.

F6. Air Emissions Control

EGPC

6.1. Scope

This procedure is applicable to all EGPC rig contractors, and all rig operators /contractors related/ supporting activities commencing at both offshore and onshore facilities.

6.2. Purpose

EGPC guideline for Drilling and Workover Spill Prevention, Preparedness and Response Procedure defines the minimum steps to be followed to prevent the occurrence of a spill, and to ensure the optimum response and mitigation plans in case of a spill, including its reporting. The procedure also outlines the corrective actions to be carried out to prevent the recurrence of spill events.

6.3. Potential Spill Sources

Spills can result from individual or variable cause(s), including:

- Connection/line failure during bunkering.
- Failure of fuel tanker lines, connections or an above ground storage tank during filling.
- Well control issue such as Kick or Blowout.
- Failure/Damage of a chemical containers/storage tank during handling/storage.
- Leaking from equipment/machinery/engine/vessel.
- Overflow during mud/drilling fluid preparation.
- Collision Incident

6.4. Procedures

- All rig contractors have to issue a comprehensive Spill prevention and spill emergency preparedness plans , Both must be up to date and kept in the rigs site
- Records for both plans must be kept at rig site
- The comprehensive Spill prevention plan shall include but not limited to:-
  - Equipment integrity and preventative maintenance program
  - Daily or weekly site walk-around inspections and should be documented and records kept onsite for auditing purposes.
  - Best available Control Technologies applications
  - Adherence to and implementation Hazardous Materials Management procedures
  - Adherence to requirements of any in-place Permits to Work (PTWs) and supporting work method statements and job safety analysis documents that address isolation/removal of isolation means (e.g., blinding/open and closing of valves) and system reinstatement, through means such as removal of lock-out/tag-out (LOTO) devices.
  - Engineering controls such as prior to working on contaminated tubular sections, sufficient ground cover made of plastic, other water-proof and durable materials
  - Well control program implementation.
  - Well control equipment integrity, inspection and testing
  - Administrative Controls such as adding a work requirement for fuel tanks to only be refilled from ground level or lower hose connections and not top filled, or prohibiting activity such as the prohibition of refueling of equipment with suspended fuel tanks.
  - Spill emergency plan
  - Identify and provide spill prevention equipment (for example spill control pallet or secondary containment).
  - Identify and provide spill emergency equipment (for example spill kit)

6.4.1. Classification of Spills

- Refer to EGAS unified incident reporting and investigation procedures March 2017
- Refer to EGPC drilling and workover \HSE guidelines incident reporting, levels of investigation and EGPC related procedures in this regards .

6.4.2. Spill Preparedness

- All rig Contractors will include a section within their site specific Emergency Response Plan (ERP) that addresses spill response incidents.
- The ERP will include the total number and positions of their spill response team personnel.
- The ERP will also address all probable spill scenarios (i.e., oil, fuel, acids, etc.), response and mitigation actions.

6.4.3. Emergency Drills and exercise

Spill preparedness and response drills shall be completed at regular intervals. The main objectives of conducting regular drills includes:

- Familiarizing all personnel with their roles, responsibilities and the use of kit/equipment.
- Practicing and improving the spill response management and tactical skills/ techniques.
- Identifying any potential operational/logistical problems that may arise during an actual spill.
- The PIC is ultimately responsible for the implementation of spill response preparedness through drills.
- All rig contractors must identify and issue specific spill emergency drills matrix
- After the completion of each drill, a drill review will be conducted to review the effectiveness and performance of the overall response. This review will be used to identify areas of strength, weaknesses, areas of improvement, or changes in contact details and roles/ responsibilities.
- All Drills required by scheduled will have a “Drill Report” issued and kept at site. This report will include any lessons learned from the drill.

6.5. Spill Kit/Equipment

- Rig contractors must provide adequate spill kit/equipment at each Drilling and workover rigs appropriate and matched with their Spill emergency plan
- List of spill kit/equipment for each rig must be identified, updated and kept in place
- Rig contractors are ultimately responsible to ensure there are a sufficient number of properly trained personnel to appropriately respond by mitigation, evacuation, reporting or any other required actions for all spill scenarios.
- As training is an essential component of preparedness, spill response members shall be trained in spill response to ensure that all the designated response personnel are able to respond to a spill in a quick and competent manner.
- Training must be held through qualified third parties

F7. WATER CONSERVATION PROGRAM

EGPC

7.1. Scope

This document describes industry recommended practices, procedure and EGPC D &WO guidelines required for effective Sanitary & Hygiene procedures to ensure compliance

7.2. Purpose

- This section specifies the public health requirements necessary for the maintenance of a hygienic, safe and wholesome water supply.
- This procedure is prepared to ensure the quality of the sanitary and hygiene on the EGPC rigs contractor and avoids that rig contractor personnel being exposed to water borne illness which is caused by mishandling of water.

7.3. Definitions

7.3.1. Chlorine Residual

The amount of chlorine in all forms (total) or (free) remaining in treated water to ensure disinfection for a certain period of time.

7.3.2. Coliform Group Bacteria:

- Group of bacteria predominantly inhabiting the intestines of man or animal, but also occasionally found elsewhere. It includes all aerobic and facultative anaerobic, gram negative, non-spore forming bacilli that ferment lactose with production of gas.
- A group of organisms, which include Escherichia coli.

7.3.3. Contamination Water

The direct or indirect introduction into water of microorganisms, chemicals, wastes or wastewater.

7.3.4. mg/L

Milligrams per liter, which is the metric equivalent of parts per million (ppm).

7.3.5. TDS (Total Dissolved Solids)

Total solids dissolved in water. TDS is expressed in mg/L frequently expressed as parts per million (ppm).

7.3.6. Vacuum Breaker

A device for relieving a vacuum or partial vacuum formed in a pipeline, preventing back siphon age.

7.3.7. Bottled Drinking Water

All water, which is sealed in bottles, packages or other containers and offered for sale for human consumption.

7.3.8. Chemically Treated

Any water that has been chemically treated. The treatment may range from simple addition of chlorine to kill bacteria to multiple chemical applications to render it non-corrosive and or non-scaling or to remove certain physical or chemical pollutants.

7.3.9. Compliance Monitoring:

- In the case of any water supplied from a distribution network, the point of compliance is where it emerges from the taps that are normally used for human consumption

- In the case of water supplied from a tanker the point of compliance is where the water emerges from the tanker. Compliance Monitoring shall be construed as collecting samples from these points for the purpose of determining water quality.

7.3.10. Cross-connection

- Any actual or potential connection between the potable drinking or potable raw water supply and / or a source of contamination or pollution including contamination by water of an inferior quality.
- Raw water and potable raw water are inferior quality to drinking water.
- Cross-connections are the links through which it is possible for contaminating materials to enter a potable water supply.
- The contaminant enters the potable water system when the pressure of the polluted source exceeds the pressure of the potable source. The action may be called back siphon age or backflow. Essentially it is reversal of the hydraulic gradient that can be produced by a variety of circumstances. Cross connection can also occur when there is a direct pathway between the potable water supply and a potential source of contamination.
- Examples include potable tanks sharing a common wall with a tank containing an inferior product or pipes containing a contaminant passing through or over a water potable water tank.

7.3.11. Desalinated

Water from which most of the dissolved salts have been removed by one of the desalination processes (e.g. reverse osmosis, electro dialysis or flash evaporation).

7.3.12. Disinfect

To kill infectious microorganisms by physical or chemical means. Some bacterial spore forming organisms may survive the process, but all other microorganisms are reduced to insignificant levels or eliminated completely.

7.3.13. Drinking water

Water intended primarily for human consumption, either directly, as supplied from the tap, or indirectly, in beverages, ice or foods prepared with water. Drinking water is also used for other domestic purposes such as bathing and showering.

7.3.14. Filter

A device made of porous material, through which a fluid is passed, to separate from it matter held in suspension.

7.3.15. Fire Water

Any water (fresh, well, sea) contained in a piping system or storage tank and normally intended to provide water for extinguishing fires. The source of the fire water shall be identified.

7.3.16. Groundwater

That part of the subsurface water that is in the zone of saturation.

7.3.17. Hard water

Any water containing more than 300 mg/L calcium and or magnesium expressed as calcium / magnesium carbonate

7.3.18. Health Hazard

- Conditions considered to be hazardous to health and or a nuisance. For the purposes of this Code section an actual or potential health hazard includes an unprotected service connection on a drinking water supply to any domestic property supplied with both potable raw and potable drinking water, and an unprotected potable water service connection to a commercial or industrial property.

- Hazardous condition may include Fixtures with direct water connections or submerged inlets (sanitary appliances, water heaters, washing machines, dishwashers etc.)

7.3.19. Hypochlorite

In its sodium salt form, the active bleaching ingredients in liquid chlorine bleach.

7.3.20. Liquid Chlorine Bleach

A solution of sodium hypochlorite, a highly active oxidizing agent, Liquid chlorine bleach is also called household bleach and is commonly distributed as an approximately five percent solution of sodium hypochlorite.

7.3.21. Managed network

Refers to a distribution system which is the responsibility of water-supply operator serving private property.

7.3.22. Maximum Contaminant Level (MCL)

The highest level of a contaminant that is permitted in drinking water.

7.3.23. µg/L

Micrograms per liter, which is equivalent to parts per billion (ppb).

7.3.24. Operational monitoring

Operational monitoring refers to monitoring of water quality in the treatment process and leaving the works prior to entering the distribution system.

7.3.25. Potable Raw Water

Raw water which has been disinfected and is distributed in a separate supply system for domestic use – i.e. washing, showering, flushing cisterns etc.

7.3.26. Raw Water

Raw water refers to water in a storage reservoir, or underground source prior to receiving treatment. This water normally contains less than 5,000 mg/l TDS

7.3.27. Safe

Free from micro-organisms, parasites and substances which in terms of number or concentration constitute a potential danger to public health and otherwise meets the contaminant levels

7.3.28. Secondary maximum contaminant level (SMCL)

Secondary drinking water standards

Regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water.

7.3.29. Utility Water

Water containing, normally less than 5000mg/L TDS, used in process facilities other than human consumption

7.3.30. Air Break

A physical separation, which may be a low inlet into the indirect waste receptor from the fixtures, appliances or devices indirectly connected.

7.3.31. Air Gap

- In a water supply system, it is the unobstructed vertical distance through the atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture or other device in the flood-level rim of the receptacle.
- The unobstructed vertical distance between the inlet from the potable water system and the flood level rim of the non-potable water system, for a safe air gap, must be equal to at least twice the inside diameter of the inlet pipe.

7.3.32. Backflow

The flow of water or other liquids, mixtures or substances, under positive or reduced pressure in the distribution pipes of a potable water supply from any source other than its intended source.

7.3.33. Backflow Prevention Assembly

A device or means designed to prevent backflow or back siphonage. Most commonly categorized as air gap, reduced pressure principle device, double check valve assembly, and pressure

7.3.34. Water Supply System

Includes the waterworks and auxiliaries for collection, treatment, storage and distribution of the water from the sources of supply to the free-flowing outlet of the consumer.

7.3.35. Water Hardness

Soluble metal salts, principally those of calcium and magnesium, sometimes including iron and manganese that, when present in water in significant levels, can create scaling problems.

7.3.36. Water Intended for Human Consumption

All water either in its original state or after treatment, intended for drinking, cooking, food preparation or other domestic purposes, regardless of its origin and whether it is supplied from a distribution network or from a tanker.

7.3.37. Fire Water Distribution System

Fire water need not be drinking water quality if distributed in a separate, independent water distribution system that is used for no purpose other than firefighting, i.e. the water from the separate, independent fire water system and is not intended for human consumption. Where tanks used for the storage of fire water are supplied by a system intended for human consumption a suitable backflow prevention device must be provided between the fire water tank and the supply water.

7.4. Responsibilities

7.4.1. Medic / Doctor

- The rig Medic / Doctor is responsible for implementing EGPC Guideline sanitary and hygienic procedure & compliance with established hygiene instructions
- He is responsible for conducting daily as well as weekly hygienic inspections and reporting same.
- The Medic / Doctor is responsible for collecting water samples from tanks / water supply and ice machines in order to perform required tests plus maintain records in the clinic files and send water samples for approved Egyptian laboratory in monthly basis in order to conduct monthly

water analysis. The result of the monthly tests shall be recorded and maintained in the clinic files.

7.4.2. Rig Contractor Management

The management is responsible to ensure that, this procedure is periodically appraised and if necessary revised. Adequate staff, funds and materials are available to meet the requirement of the sanitary and hygiene procedures.

7.5. Transportation & Storing

7.5.1. Water Transportation

- Water shall be obtained, conveyed, treated, stored and distributed in closed containers that are protected from contamination.
- Water Truck / Boat supplies potable water to rig contractors units in a regular basis and controlled by a formal manifest which is managed by medic and recorded in rig Medic filing system.
- Enough chlorine shall be added to the water in the bulk water tanker to produce a residual chlorine of not less than 0.5 mg/l or more than 1.0 mg/l at the point of delivery.

7.5.2. Water Storage Tank

7.5.2.1. Onshore Water Tanks

- After bunkering, isolate the storage tank(s) for 30 min. Analyze a sample taken from the water in the storage tank for free residual chlorine. The results should be within 0.05-3 mg/l.
- After the bunkering is finished. The results must be logged, at the next bunkering and if required, the dosing pump should be adjusted according to the results previously obtained. If no free residual chlorine can be traced, add chlorine solution directly into the tank through the roof manhole, before a new sample is taken. This procedure must be repeated until residual chlorine traces are found. If the amount of residual chlorine is too high, the water can be diluted with water from another storage tank or the chlorine can be removed with sodium bi-sulphate. The water can also be stored for a few days before consumption.
- The chlorine concentration will then usually be reduced. Add hypochlorite solution to the tank as required and if found necessary following analysis of water samples.
- A procedure for measuring residual chlorine must be enclosed with the instrument of analysis. Before the tank is placed in service, a sample for bacteriological analysis shall be collected from the tank. Note that the residual chlorine level shall be no higher than 3 milligrams per liter (3 parts per million) when the sample is collected.
- The sample shall be tested to verify the absence of coliform organisms and a heterotrophic plate count [HPC] of 500 CFU/mL or less. If check, samples show the presence of coliform organisms in the tank but not in the source supply, then the tank shall be re-chlorinated. If test results from the source supply tanker show it to be contaminated with coliform bacteria, then the source of the problem shall be identified and corrected by cleaning and disinfecting the tanker interior water storage by the water supplier and the water supplier shall provide a proof manifest that this process was implemented properly. After correction is verified by bacteriological testing, the tank shall be emptied and refilled. Water from the refilled tank shall be tested to verify the absence of coliform bacteria again.
- All water storage tanks shall be provided with a sample tap, which shall be identified and in working order.
- All water storage tanks shall be drained, visually inspected internally and cleaned on yearly cycle; and de-sludge and super-chlorinated by application of a chlorine solution or other approved means at least every 12 months.
- Records shall be kept of the dates of inspections, procedures to be followed, disinfectants used

and the strength of the disinfecting solution.
- Vents shall be of the gooseneck type or roof ventilator type, protected to prevent possible entry of dust, any animals, insects, or any contaminants, with the opening protected by 16-mesh or finer corrosion resistant screening.
- Equipment, devices, filters, and all other water treatment or conditioning apparatus, shall be operated, inspected and serviced or replaced according to the manufacturer's instructions and specifications, and shall not be operated beyond their rated capacity.
- All such equipment shall be maintained in a clean and sanitary condition and, if necessary, shall be sanitized by application of a chlorine solution or by other approved means. Where any of the above are used in remote locations appropriate manufacturer's instructions shall be kept on site as part of that sites Operating Procedures.
- All the water filters must be inspected weekly by rig Senior Mechanic and a record must be kept for changing water filters. All water filters should be tagged with the date of installation.
- If hoses are used for conveying potable water, they shall be dedicated, constructed of safe materials, shall have a smooth interior surface, shall be used for no other purpose, and shall be clearly identified as to their use. Caps and keeper chains shall be provided for water system inlet and outlet fittings, as well as hose fittings. All such fittings shall be capped when not in immediate use. Hoses shall be stored and used to be kept free of contamination.

7.5.2.2. Offshore Water Tanks

- Connect the filling hoses to the supply vessel, request the supply vessel to start their transfer pump, while closing our supply valve in the manifold, take a sample of the water, the medic will analyze the sample
- The sample shall be tested to verify the absence of coliform organisms and a heterotrophic plate count [HPC] of 500 CFU/mL or less. If check samples show the presence of coliform organisms in the tank but not in the source supply, then the tank shall be re-chlorinated. If test results from the source supply vessel show it to be contaminated with coliform bacteria, then the source of the problem shall be identified and corrected by cleaning and disinfecting the vessel's tank interior water storage. This should be communicated with the client, who is responsible for all supply vessels. Water from the refilled tank shall be tested to verify the absence of coliform bacteria again.
- After testing completed, the bunkering operations will be started to the potable water tanks analyze a sample taken from the water in the storage tank for free residual chlorine. The results should be within 0.05-0.3 mg/l. After the bunkering is finished. The results must be logged.
- Vents shall be provided with each tank which is square and a ball installed inside.
- Water line in the bunker stations (STBD & PS) shall be provided with a sample tap, which shall be identified and in working order.
- Records shall be kept of the dates of inspections, procedures to be followed, disinfectants used and the strength of the disinfecting solution.
- All water tanks shall be properly sealed to avoid contamination by any external resources.
- If hoses are used for conveying potable water, they shall be dedicated, constructed of safe materials, shall have a smooth interior surface, shall be used for no other purpose, and shall be clearly identified as to their use. Caps and keeper chains shall be provided for water system inlet and outlet fittings, as well as hose fittings. All such fittings shall be capped when not in immediate use. Hoses shall be stored and used to be kept free of contamination.
- All water storage tanks shall be drained, visually inspected internally and cleaned on yearly cycle, and de-sludge and super-chlorinated by application of a chlorine solution or other approved means at least every 12 months.

7.5.3. Guideline for Cleaning and Disinfection

7.5.4. of Water Storage Tanks

7.5.4.1. Backflow-Prevention Assembly

- A device or means designed to prevent backflow or back siphon age. Most commonly categorized as air gap, reduced pressure principle device, double check valve assembly, pressure vacuum breaker, atmospheric vacuum breaker, hose bibb, vacuum breaker, residential dual check, double check with intermediate atmospheric vent, and barometric loop.
- A Backflow-Prevention Assembly shall be installed if there are any possible connections when there is a direct pathway between the potable water supply and a potential source of contamination. Examples: General Bathroom's water supply line, Toilets flushers and potable water pump delivery lines.
- All potable water supply Tanks/piping system shall be completely isolated from the raw water lines or any other contaminated fluid piping in order to avoid any contamination could happen from the raw water supply or any potential contaminant. Any kind of cross-connection is not allowed in the potable water system.

7.5.4.2. Guidelines for the chlorination of bunkered water

When chlorination is employed, a sufficient amount of chlorine shall be added to the water to maintain a measurable free chlorine residual of at least 0.5 milligrams per liter (0.5 parts per million) at all points in the distribution system from which water may be withdrawn. The maximum chlorine residual should not exceed 3.0 mg/L (3.0 ppm).

7.5.4.3. Manual Dosing

When the dosing is operated manually, the dosage has to be calculated. The dosage has to be regulated according to the results of analysis. Make a note of the volume of water to be bunkered (m3) and the rate of bunkering (m3/h). If there is any water left in the tank, this volume must be added to the volume of water that is going to be bunkered.

7.5.4.4. The required volume of chlorine solution

- Bunkering period (h) = volume to be bunkered (m3) / bunkering rate (m3/h)
- Required volume of chlorine solution (l) = feed rate (l/h) x bunkering period (h)

7.5.5. Guideline for Cleaning and Disinfection of Water Storage Tanks

Sludge of organic material, corrosion products etc. will settle to the bottom of the tanks during operation. Bacteria may form a film of slimy appearance on the tank walls. The storage tanks should therefore be cleaned and disinfected at regular intervals. The tanks should also be disinfected after periods of inspection and or maintenance. After repairs and painting have been completed; the interiors of all water storage tanks shall be disinfected before they are placed in service (it may take a week before it can be used).

7.5.5.1. Disinfection Method

- After paint has thoroughly dried and cured, the tank shall be filled slowly to the overflow level with potable water to which enough chlorine has been added
- The chlorine, either as sodium or calcium hypochlorite shall be introduced into the water as early during the filling operation as possible. Early introduction of chlorine is essential
- because the filling action is depended upon to agitate and evenly mix the chlorine with the total volume of water in the tank.
- Chlorine compound should be poured into the tank through the clean out or inspection manhole, the inspection manhole shall be bolted covered, if no manhole available at the bottom, the chlorine solution shall be poured into the tank through the roof manhole

- The chlorinated water shall be retained in the tank for at least 24 hours, during which time all valves shall be operated several times to ensure disinfection of the appurtenances. At the end of this 24-hour period, the treated water in all portions of the tank shall have a residual of not less than 10 milligrams per liter (10 parts per million) free chlorine
- After the holding period, the super chlorinated water in the tank shall be completely drained to waste.
- After refilling and before the tank is placed in service, a sample for bacteriological analysis shall be collected from the tank.

Note: The residual chlorine level shall be no higher than 3 milligrams per liter when the sample is collected.

- Samples shall be collected in sterile bottles treated with sodium thiosulfate. No hose, valve or outlet other than the tank sample tap shall be used in collection of samples
- If the initial disinfection fails to produce satisfactory, the tank shall be emptied and refilled again then samples shall be taken from the tank and the water supply, if the tank sample shows presence of coliform organisms but not in the water supply then the tank shall be re-chlorinated by the high concentration method, if test results from water supply sample shows presence of bacteria then the source problem must be identified and corrected immediately. After correction is verified by bacteriological testing, the tank shall be emptied and refilled. Check samples again. If the tank sample shows presence of coliform organisms but not in the water supply then the tank shall be re-chlorinated by the high concentration method.
- If a water tanker supply is used, water tankers shall be drained, visually inspected and sanitized by application of chlorine or any other approved means of disinfection at least every 12 month or if any bacterial presence in tests results. Records shall be kept of the dates of disinfection.

7.5.5.2. Cleaning

Surfaces inside the tank must be flushed with a high pressure hose jet. Check whether there is a slimy layer on the surfaces, and ensure that this layer is thoroughly removed. If necessary, the tank must be scrubbed, but care must be taken not to damage any protective linings or coatings. After scrubbing and flushing, the tank should again be completely emptied. Personnel performing the cleaning must wear clean working clothes and boots prior to entering the tank. All equipment must be cleaned prior to being used for washing purposes.

7.5.5.3. Inspection

After the storage tank has been cleaned and emptied it should be inspected to ensure that the cleaning was effective, also if parts of the surfaces need repainting. It is the Doctor's responsibility to inspect the tank after cleaning and before refilling. Records and the PTW copy shall be kept of the dates of inspections, procedures to be followed, disinfectants used and the strength of the disinfecting solution. All this records shall be documented in Medic filing system.

7.5.6. Distribution System Disinfection

- Newly installed water distribution systems shall be inspected and subject to bacteriological testing.
- Precautions shall be taken to protect pipe interiors, fittings, and valves against contamination during connection/laying out of the potable water distribution system.
- Before being chlorinated, the potable water distribution system shall be filled to eliminate air pockets and shall be flushed to remove all particulates, the flushing velocity in the main shall not be less than 76 centimeters per second (2.5 feet per second) unless conditions do not permit the required flow to be discharged to waste.
- Water entering the distribution system shall have not less than 25 milligrams per liter (25 parts per million) free chlorine. The chlorine concentration shall be measured at the farthest faucet from the water source.
- Chlorine application shall not cease until the entire distribution system is filled with super chlorinated water. The chlorinated water shall be retained in the distribution system for at least

24 hours, during which time all faucets and taps shall be operated multiple times to ensure disinfection of appurtenances. At the end of the 24-hour period, the treated water in all portions of the distribution system shall have a residual of not less than 10 milligrams per liter (10 parts per million) free chlorine.
- After the applicable retention period the super-chlorinated water shall be flushed from the main until chlorine measurements show that the concentration in the water leaving the main is not greater than 1 milligram per liter (1 parts per million).

7.6. Water Conservation Roadmap

7.6.1. Measure / benchmark current water consumption:

- Establishing a baseline against which future reductions will be measured is an important first step in tracking progress.
- Environmental Measuring / Monitoring shall include consumption limits for water. Water flow meters shall be provided, installed, and calibrated to get accurate measurements for the consumed water.

7.6.2. Develop a water usage profile

A water use profile will help clarify how water is used in various systems (e.g., HVAC, sanitary, laundry, etc.); Water Usage Profile can help identify reduction opportunities to refine the performance of those systems. Understanding baseline and water use profile will help better understanding of the best opportunities for improvement

7.6.3. Develop Water Cycle Diagrams:

Water cycle diagrams describes the continuous movement of water in the rig / facility. They help in the development of water usage profile. Water cycle diagrams shall include color coding.

7.6.4. Set targets/goals:

It is important to set both short- and long-term reduction goals for water use reductions. Target setting allows rig operators to establish reasonable, SMART goals that are consistent with a basic, intermediate, or advance approach. Targets / goals could be set in the annual rig operators QHSE Plan.

7.6.5. Develop strategic action plans for improvement

The Roadmap performance improvement measures list is designed to help pick and choose projects to help meet EGPC water conservation goals.

7.6.6. Train, and educate:

Workers must be educated of the reasons for any changes, trained on work practice changes, and informed with ongoing feedback to how the action plan's progress is meeting the goals. Training and education are both formal, with specific learning objectives, and informal with educational materials that includes posters, information sharing in newsletters, and a variety of media. Informed staff are engaged staff.

7.6.7. Fresh Water Operational Water Pits

- Operational water shall be stored in a manner that minimize water loss.
- Water pit volume and sizing shall be optimized based on operational requirements.
- Drilling water and wastewater pit walls and bottoms shall be protected in a manner
- that prevents erosion of the compacted MARL layers, when pits are not lined with
- HDPE. This can be done by liners, drip pans, energy dissipating blocks or other solution that prevents erosion of the pit.

- Water pits should maintain the minimal amount of water necessary during the
- current operational activity in the drilling cycle. If a larger quantity of water is in a pit from a previous operation, the excess amount may only be reduced through operational usage.
- Water pits will be kept at lowest possible volume to prevent overflow of the pit during
- rainy seasons, traditionally in spring and fall. Water pits shall not be filled beyond 75% of its depth during Normal operations (i.e., no well control emergencies).
- Any excess water left in the pit after completion of drilling operations, and before rig

7.7. Potable Water Treatment System

7.7.1. The Offshore Potable Water Treatment System consists of:

- Water Maker
- Neutralizer / Mineralizer System
- Automatic Chlorine Unit
- Potable Water Pumps
- Activated Carbon Water Fine Filter
- Ultra Violet Sterilizer

7.7.2. Water Maker

- The combined brine / air ejector driven by the ejector pump creates a vacuum in the system in order to lower the evaporation temperature of the feed water.
- The feed water is introduced into the evaporator section stage 1 through an orifice, and is distributed into every second plate channel (evaporation channels).
- The hot water is distributed into the remaining channels, thus transferring its heat to the feed water in
- the evaporation channels.
- Having reached boiling temperature - which is lower than at atmospheric pressure the feed water undergoes a partial evaporation, and the mixture of generated vapor and brine enters the separator vessel, where the brine is separated from the vapor and is introduced into every second channels of the evaporator stage 2 as feed water.
- The vacuum steam generated in the first stage passes via a demister into the remaining channels in stage 2 of the evaporator section.

7.7.3. Neutralizer / Mineralizer System

- It is undesirable to have domestic water, produced by Desalination Plants such as evaporators and reverse osmosis water makers, with a low pH value (Acid Condition) due to its corrosive and harmful effects.
- The water should therefore be treated to make it neutral or slightly alkaline. This acid condition is due to the presence of free carbonic acid gas (C02) and to ensure its complete removal the water should be filtered through a bed of neutralizing filter media, named E.W.T. Compound, where the C02 combines with the filtering material to form natural bicarbonates.
- The consumption is approximately 1/2 kg (1lb) of material per 35.000 liters of water to be treated. It is sufficient to effect partial reloading 2 - 4 times a year only to compensate for the quantity which disappears by dissolving in the water.
- E.W.T. Compound is supplied in granules packed in 25kg. It is advisable to occasionally reverse the flow of water through the unit to loosen the medium and to flush after every refill until the water is clear again.
- A Neutralizing-filter will improve taste and quality of the water. It will avoid corrosion (rust and oxidized particles) in the fresh water system.

7.7.4. Automatic Chlorine Unit

In order to determine the Sodium Hypochlorite dosing it is first necessary to ascertain the required amount of Sodium Hypochlorite to be added in milligrams per liter to give a residual of 0.5 mg/l.

7.7.5. Operational Checks

- Check that the stock of chlorine is sufficient and not beyond its shelf life.
- Check that the dosing vessel contains sufficient solution for at least 24 hours operation, or enough to last until the next operational check.
- Check that the analysis results for residual chlorine are within the recommended limits. The dosing pump must be adjusted as necessary to meet the desired levels of chlorination. On a general basis the chlorine content should be 0.05 - 0.5 mg/l measured as free residual chlorine, 30 minutes after the chlorine was added.

7.7.6. Activated Carbon Water Fine Filter

- Hatenboer-Water activated carbon water fine filters are effective and well-designed filter units to remove most traces of organic based pollution. The physical and chemical quality of the water will be improved in order to prepare drinking water and or process water free of hydrocarbons (ola mineral oils), aromatic derivatives, pesticides, detergents, chlorine (dechlorination) etc. The water enters the filter unit and passes through a layer of selected granulated activated carbon, which is packed in spiral wounded polypropylene filter elements (FDAquality).
- The active carbon removes the organic pollution by means of adsorption. The turbid matter is removed by filtration at 5 micron nominal selectivity. Under normal conditions the carbon elements will require to be replaced every three months based on the pressure drop over the filter unit or as per OEM instruction, with a minimum of one replacement per year (drinking water-treatment applications only). This is depending on the drinking feed water quality. Analysis of the feed water and the filtrate water may be required to indicate moment of filter bed replacement.

7.7.7. Ultra Violet Sterilizer

- UV guarantees that the microbiological requirements of drinking water are met.
- This system contains all functions to control and supervise the UV system, operator panel, lamp start sequencer, UV lamp supervision, UV intensity monitoring, flow control interlock, etc. The status of the UV system is permanently displayed at the operator panel.
- During “normal” operation the display continually shows the current parameter values.
  - UV Intensity
  - Operating hours of UV lamps
  - On / Off switches of UV reactor
  - Event- or alarm messages

7.7.8. The following messages result from factory set threshold values:

- GREEN UV intensity higher than pre-alarm threshold value (> 60% of maximum value).
- YELLOW UV intensity is lower than pre-alarm threshold value « 60%, > 50%), maintenance may be necessary in next future
- RED UV intensity lower than alarm threshold value « 50%) or UV lamp failure, maintenance necessary

7.7.9. Lamp Monitoring System

- This system consists of UV sensor, electronics (amplifier / limit value relays), UV lamp supervision, as well as operator panel with pilot lights and text display. The intensity (254 nm) within the reactor chamber is measured continuously by the UV sensor. After signal processing the intensity [W/m2] is displayed, furthermore it is available as a standard analogue output signal (0-20 or 4-20mA) for external signal processing.

- By permanent measurement of UV intensity highest degree of safety is guaranteed. Every failure will be displayed at the operator panel as well alarm signaling is caused without delay.
- The efficiency of the UV system substantially depends on the UV intensity being available in the reactor. During operation ageing of the UV lamp reduces the UV intensity, as does scale formation on the lamp's quartz jacket. The intensity also may be influenced by supply voltage and/or UV absorption (water quality)

7.7.10. Cleaning Process

A cleaning procedure should be carried out as often as scale cause a decrease in UV intensity of -20%, it is necessary latest when >UV-Intensity< is displayed. As such a decrease also may be caused by ageing of the UV lamp or changes in water quality (UV transmission), a visual inspection of the UV sensor or the quartz jacket (UV module) is helpful before starting the cleaning procedure. Proceeding in this way leads to cleaning intervals which are adapted to the individual operating conditions (water quality). Quartz jacket (UV module) and UV sensor always have to be cleaned together, for this they have to be dismounted. It is recommended to use wetted white cotton or a sponge for wiping, eventually a suitable cleaning agent

7.7.11. The Onshore Potable Water Treatment System consists of:

- Neutralizer / Mineralizer System
- Automatic Chlorine Unit
- Activated Carbon Water Fine Filter
- Ultra Violet Sterilizer
- Potable Water Pumps

7.7.12. Neutralizer / Mineralizer System

- It is undesirable to have domestic water, produced by Desalination Plants such as evaporators and reverse osmosis water makers, with a low pH value (Acid Condition) due to its corrosive and harmful effects.
- The water should therefore be treated to make it neutral or slightly alkaline. This acid condition is due to the presence of free carbonic acid gas (CO_2) and to ensure its complete removal the water should be filtered through a bed of neutralizing filter media,named E.W.T. Compound, where the CO_2 combines with the filtering material to form natural bicarbonates.
- The consumption is approximately 1/2 kg (1lb) of material per 35.000 liters. of water to be treated. It is sufficient to effect partial reloading 2 - 4 times a year only, to compensate for the quantity which disappears by dissolving in the water.
- E.W.T. Compound is supplied in granules packed in 25 kg. It is advisable to occasionally reverse the flow of water through the unit to loosen the medium and to flush after every refill until the water is clear again.
- A Neutralizing-filter will improve taste and quality of the water. It will avoid corrosion (rust and oxidized particles) in the fresh water system.

7.7.13. Automatic Chlorine Unit

In order to determine the Sodium Hypochlorite dosing it is first necessary to ascertain the required amount of Sodium Hypochlorite to be added in milligrams per liter to give a residual of 0.5 mg/l.

7.8. Operational Checks

- Check that the stock of chlorine is sufficient and not beyond its shelf life.
- Check that the dosing vessel contains sufficient solution for at least 24 hours operation, or enough to last until the next operational check.
- Check that the analysis results for residual chlorine are within the recommended limits. The dosing pump must be adjusted as necessary to meet the desired levels of chlorination.

- On a general basis the chlorine content should be 0.05 - 0.5 mg/l measured as free residual chlorine, 30 minutes after the chlorine was added.

7.8.1. Activated Carbon Water Fine Filter

- Hatenboer-Water activated carbon water fine filters are effective and well-designed filter units to remove most traces of organic based pollution. The physical and chemical quality of the water will be improved in order to prepare drinking water and or process water free of hydrocarbons (ola mineral oils), aromatic derivatives, pesticides, detergents, chlorine (dechlorination) etc.
- The water enters the filter unit and passes through a layer of selected granulated activated carbon, which is packed in spiral wounded polypropylene filter elements (FDAquality).
- The active carbon removes the organic pollution by means of adsorption. The turbid matter is removed by filtration at 5-micron nominal selectivity.
- Under normal conditions the carbon elements will require to be replaced every three months based on the pressure drop over the filter unit or as per OEM instruction, with a minimum of one replacement per year (drinking water-treatment applications only). This is depending on the drinking feed water quality. Analysis of the feed water and the filtrate water may be required to indicate moment of filter bed replacement.

7.8.2. Ultra Violet Sterilizer

- UV guarantees that the microbiological requirements of drinking water are met This system contains all functions to control and supervise the UV system, operator panel, lamp start sequencer, UV lamp supervision, UV intensity monitoring, flow control interlock, etc. The status of the UV system is permanently displayed at the operator panel.
- During “normal” operation the display continually shows the current parameter values.
  - UV Intensity
  - Operating hours of UV lamps
  - On / Off switches of UV reactor
  - Event- or alarm messages

The following messages result from factory set threshold values

- GREEN UV intensity higher than pre-alarm threshold value (> 60% of maximum value)
- YELLOW UV intensity is lower than pre-alarm threshold value « 60%, > 50%), maintenance may be necessary in next future
- RED UV intensity lower than alarm threshold value « 50%) or UV lamp failure, maintenance necessary

7.8.3. UV Lamp Monitoring System

- This system consists of UV sensor, electronics (amplifier / limit value relays), UV lamp supervision, as well as operator panel with pilot lights and text display.
- The intensity (254 nm) within the reactor chamber is measured continuously by the UV sensor. After signal processing the intensity [W/m^2] is displayed, furthermore it is available as a standard analogue output signal (0-20 or 4-20mA) for external signal processing.
- By permanent measurement of UV intensity highest degree of safety is guaranteed.
- Every failure will be displayed at the operator panel as well alarm signaling is caused without delay.
- The efficiency of the UV system substantially depends on the UV intensity being available in the reactor. During operation ageing of the UV lamp reduces the UV intensity, as does scale formation on the lamp’s quartz jacket. The intensity also may be influenced by supply voltage and / or UV absorption (water quality)

7.8.4. Cleaning Process

A cleaning procedure should be carried out as often as scale cause a decrease in UV intensity of -

20%, it is necessary latest when >UV-Intensity< is displayed.

As such a decrease also may be caused by ageing of the UV lamp or changes in water quality (UV transmission), a visual inspection of the UV sensor or the quartz jacket (UV module) is helpful before starting the cleaning procedure. Proceeding in this way leads to cleaning intervals which are adapted to the individual operating conditions (water quality) Quartz jacket (UV module) and UV sensor always have to be cleaned together, for thi they have to be dismounted. It is recommended to use wetted white cotton or a sponge for wiping, eventually a suitable cleaning agent

7.8.5. Replacement of UV Lamp

The effective life of the UV lamp depends on the required minimum UV dose [J/m^2] which is resulting from the existing UV intensity [W/m^2] and duration time (flow rate). Normally, the lamp has to be replaced latest, when >UV-Alarm< or >UV-Intensity< is indicated following cleaning procedure. Especially, if treating water with altering UV transmission care should be taken for appropriate reserve (please note: low UV transmission caused by high count of particles can't be compensated by higher intensity).

7.8.6. Tests

- The Medic must ensure that potable water is obtained from an approved source and has added adequate chlorine to the water in the bulk water transport (conveyance) system to create a 0.5 mg/L to 1.5 mg/L concentration.
- All rigs must send a water samples to an approved lab monthly. Results must be filed in the HSEMS filing system.
- The medic must perform a weekly water analysis using the test water kit. A record should be available and filed in the clinic files.
- The medic must perform a daily water analysis and a record should be available and filed in the clinic files.
- The weekly and monthly samples shall be taken from (rig camp tank, main camp tanks, water supply truck and ice making machines).

7.9. Monthly Water Analysis Sample Procedure

- Use a sterile water sample bottles for collecting the water sample.
- Collect the water sample when you are sure you can deliver it to the laboratory within six (6) hours.
- Refrigerate (cooler with ice packs) the water sample if it cannot be delivered to the laboratory within six (6) hours.
- Ensure that each water sample bottle is identified as follows:
  - Owner of the water supply
  - Location of water sampling
  - Date collected
  - Time collected
- Sample points should be included to ensure that the samples taken are representative of different sources from which the water is obtained by the public or enters the system.
- Remove any aerator, screen or other attachments from the sampling tap.
- Disinfect the end of the faucets pout with an alcohol swab before running the water to remove debris or bacteria.
- Turn on water and let it run for 3-4 minutes to remove standing water from the plumbing.
- Remove the sample bottle lid.
  - Do not touch the inside of the lid
  - Do not put the lid down in any surface
  - Do not rinse the bottle
- Fill the bottle to the level as required and close lid firmly. A small air space should be left to make shaking easier, before analysis.

- Keep the water sample cool (but not frozen) until it is received in the laboratory.

7.10. Weekly Water Analysis Sample Procedure

Follow the same instructions mentioned in section (a) Monthly water analysis.

7.10.1. Test procedure:

- Check all materials are complete inside the test kit.
- Clean the flat surface or table with Dettol Antiseptic Solution.
- Prepare all the needed materials like gloves, medical waste container, and 5cc syringe.
- Do not open packets or vial until you are ready to perform the tests.

7.10.2. Bacteria Test:

- Take out the Bacteria Test Vial and set upright on a flat surface.
- Take the water sample with a 5cc syringe and put very slowly into the vial.
- Carefully twist off cap and fill vial to ½ inch below the top (to 5ml line). DO NOT OVERFILL and DO NOT SPILL the bacteria growth powder in the vial.
- Replace the cap and twist on tightly. Shake the vial vigorously for 20 seconds or more until all the powder is dissolved.
- Place the capped vial upright in a warm area (70–90°F or 00-00°C) where it cannot be disturbed for 48 hours.
- After 48 hours, observe the color of the liquid WITHOUT opening the vial:
  - Purple Color: Negative Result (No Bacteria were detected)
  - Yellow Color : Positive Result (It is highly likely that potentially harmful bacteria were detected) then follows disinfection instructions in section
- For positive results, add bleach to the sample before pouring down the toilet, then wash hands thoroughly. Negative samples may be poured directly into the toilet.
- Discard the vial into the Medical Waste Container.

7.10.3. PH / Hardness / Chlorine Test

- Carefully open pH / Hardness / Chlorine Test packet and take out strip.
- Immerse the reagent pads into water sample and remove immediately. Hold the strip level for 15 seconds.
- Match pH (end pad), Total Hardness (middle pad) and Total Chlorine Pads (pad nearest to handle) to the color chart inside the test kit.

7.11. Daily Water Analysis

Sample Procedure:
Follow the same instructions mentioned in section (a) Monthly water analysis.

7.11.1. Test procedure

- Check all materials are complete inside the test kit.
- When adding drops of solution, hold the bottle vertically and add drops slowly to ensure proper drop size, swirling the sample after each drop.
- Perform test out of direct sunlight and read the results facing away from the light. Use the white card supplied with the kit as a background to facilitate easy reading.
- Store your test kit out of direct sunlight in a cool place.
- Replace test kit reagents yearly to ensure accurate testing results.

7.11.2. Chlorine Test

- Fill small vial to line.
- Add 5 drops Solution 1.
- Cap vial and slowly invert several times.

- Within 2-3 seconds, compare color in vial with color standards to determine Free Chlorine level.
- Wait 1-2 minutes and compare again to determine Chlorine Residual level.

7.11.3. PH Test

- Fill the large tube to the top (solid) line.
- Add 1 drop Solution 4, mix by swirling.
- Add 5 drops Solution 2, mix by swirling.
- Compare the color with pH color standards.

7.11.4. TDS (Total Dissolved Solids) Test

- Remove the protective cap.
- Press the ON / OFF switch to turn the meter on.
- Immerse the meter into the water / solution up to the max immersion level (2").
- Lightly stir the meter to dislodge any air bubbles.
- Wait until the display stabilizes. Once the reading stabilizes (approx. 10seconds), press the HOLD button to view the reading out of the water.
- If the meter displays a flashing 'x10' symbol, multiply the reading by 10.
- After usage, shake off any excess water from the meter. Replace the cap.

7.11.5. Water Temperature Test

- Once the meter is on, the temperature function can be used at any time, in or out of the liquid.
- Press the TEMP button. The display will switch to temperature (in Celsius only).
- To return to TDS' mode, press the TEMP button.

7.11.6. Total Coliform Bacteria

Only for water from saline or brackish sources treated using thermal processes

- Take out the Bacteria Test Vial and set upright on a flat surface.
- Take the water sample with a 5cc syringe and put very slowly into the vial.
- Carefully twist off cap and fill vial to ½ inch below the top (to 5ml line).DO NOT OVERFILL and DO NOT SPILL the bacteria growth powder in the vial.
- Replace the cap and twist on tightly. Shake the vial vigorously for 20 seconds or more until all the powder is dissolved.
- Place the capped vial upright in a warm area (70–90°F or 21-32°C) where it cannot be disturbed for 48 hours.
- After 48 hours, observe the color of the liquid WITHOUT opening the vial:
- Purple Color: Negative Result (No Bacteria were detected).
- Yellow Color: Positive Result (It is highly likely that potentially harmful bacteria were detected) then follows disinfection instructions in section
- For positive results, add bleach to the sample before pouring down the toilet, then wash hands thoroughly. Negative samples may be poured directly into the toilet.
- Discard the vial into the Medical Waste Container

7.11.7. Supplied Drinking Water

- The drinking water on rig operators rigs supplied by a Client approved bottled water vendor.
- Offshore potable water is provided through water makers which are under rig operators preventive maintenance program. The water shall be tested under the following conditions:
  - When the water tastes, color, etc. is abnormal.
  - When the water source changed e.g. supply by boat.
  - When the water maker has been through a major repair / upgrade / replacement
  - The same procedure for onshore rigs shall apply. Records shall be kept at clinic for reference.

F8. Noise Control Program

EGPC

8.1. Scope

All rig contractors will be maintained and operated in a way that to a safe and healthful work environment for its employees.

8.2. Purpose

The purpose of this Noise control program is to prevent occupational hearing loss and to maintain a good and healthy environment to employees by providing the proper guards to prevent any Noisy areas.

An effective Noise Control Program includes, as a minimum:

- Noise exposure monitoring
- Audiometric testing and analysis
- Provision and effective use of hearing protection
- Training on the effects of noise, the care and use of hearing protection, etc.
- Recordkeeping.
  - To translate the Rig contractors responsibilities and implementation of the procedures with effective controlling measures through work scopes, training, regular briefing on the hearing protection and effective field supervision.
  - To promote the concept of hearing protection to all its employees and to provide guidance as to individual and collective responsibilities in this area of activity.
  - Rig Contractors is committed to prevention of accidents to minimize loss of life or bodily injury to its employees, contractor and subcontractor employees.
  - In fulfilling this commitment, which is essential to and equally important as production objectives, the Rig Contractors will take every reasonable measure to provide and maintain a safe and healthful work environment for its employees and protect the public against foreseeable hazards resulting from operations.

8.3. Definitions

8.3.1. Noise:

A sound which is unwanted, either because of its effect on humans, its effect on fatigue or malfunction of physical equipment, or its interference with the perception or detection of other sounds. Noise levels are measured in decibels, or dB for short. The higher the decibel level, the louder the noise.

8.3.2. Decibel (dB):

The standard unit of sound intensity measurement.

dB (A): The sound level in decibels read on the "A"-scale of a sound level meter. The "A"- scale weighting best approximates the response of the human ear to sound.

8.3.3. Ambient Noise:

A measure of the intensity, duration, and character of sounds from all sources that affect a given location.

8.3.4. Community Noise:

A measure of the overall noise which is associated with outdoor sound levels in the community.

8.3.5. Action Level:

Equivalent continuous sound level of 85 dB (A).

8.3.6. Engineering Controls:

A physical means of reducing noise exposure which does not include the use of personal hearing protection like substitution of manufacturing equipment or isolation brought about by barriers, enclosures or modification of the equipment, including the addition of materials such as absorbers and damping materials.

8.3.7. Noise Exposure:

A cumulative acoustic stimulation which reaches the ear of a person over a specified period of time such as a work shift, a day, a working life, or a lifetime.

8.3.8. Noise Hazard:

An acoustic stimulation of the ear which is likely to produce noise induced permanent hearing loss in some of the exposed population.

8.3.9. Feasible:

Technical feasibility is the existence of technical know-how as to materials and methods available or adaptable to specific circumstances, which can be applied to control noise with a reasonable possibility that employee exposure to occupational noise will be reduced.

8.3.10. Time Weight Average (TWA):

That sound level, which if constant over an 8-hour exposure period, would result in the same noise dose as is measured.

8.3.11. Permissible Level Exposure (PLE):

The maximum legal noise exposure, established by Egyptian applicable laws. The current PEL is 90 dB (A) over an eight-hour period.

8.3.12. Noise Reduction Rating (NRR):

Is measurement, in decibels, of how well a hearing protector reduces noise? The higher the NRR number the greater noise reduction. While wearing hearing protection your exposure to noise is equal to the total noise level minus the NRR of hearing protection in used.

8.3.13. Noise Dose:

Refers to the equivalent continuous noise levels to which a person is exposed over an eight-hour working day described in decibels.

8.4. Responsibility

8.4.1. Rig Contractors PIC “SENIOR Tool PUSHER / OIM

- Coordination and supervision of noise exposure monitoring.
- Identification of employees to be included in the Hearing Conservation Program.
- Coordination and supervision of audiometric testing program.
- Supervision of hearing protector selection.
- Development of policies relating to the use of hearing protectors.
- Supervision of employee training programs.
- Coordination and supervision of required recordkeeping.
- Periodic evaluation of overall program.
- Coordination of required changes / improvements in the program.

8.4.2. Rig Management

- The rig contractors management has overall responsibility for develop, implement and manage operations in a manner consistent with the corporate occupational standards and procedures in their operations.
- Review the implementation of such standards and procedures by HSE Section.
- Manage operations under their area of responsibility in a proactive manner to ensure a safe and healthful work environment and implement requirements of Hearing Conservation Program.
- Work with HSE & Training Sections as necessary to address any outstanding issues to reach an acceptable resolution that does not compromise employee working conditions.
- Adequate staff, funds and materials are available to meet the requirement of the company's environmental protection policy. Employees receive sufficient information, instruction, training and supervision in environmental protection matters.

8.4.3. Line Manager / Rig Superintendent

Each Line Manager / Rig Superintendent has a responsibility to be fully familiar with the rig contractors Hearing Conservation Program and statutory hearing protection requirements of direct relevance to their operations and to ensure that all activities performed under their requirements.

The successful discharge of these responsibilities will impose the following duties on Line Manager / Rig Superintendent:

- Provision of instruction, guidance and support to HCPA on protection of the Environment.
- Monitoring the implementation of this procedure and working practices to identify areas of non-conformance and taking corrective actions to promptly rectify any deficiencies identified.

8.4.4. HSE Manager

- Responsibility of monitoring compliance with this Procedure is vested in the HSE Department with functional guidance and assistance from Client environmental department In addition, the responsibilities of the HSE department include:
- Provision of specialist support and advice on hearing conservation matters at all stages of rig contractors operations.

8.5. Procedures

Occupational noise can cause hearing loss and increase the worker's susceptibility to other workplace problems including physical and psychological disorders, interference with speech and communication and disruption of job performance associated with excessive noise intensities. This exposure to noise produces hearing loss of a neural type involving injury to the inner ear hair cells.

The loss of hearing may be temporary or permanent. Brief exposure causes a temporary loss.

Repeated exposure to high noise levels will cause a permanent loss.

Permanent hearing loss is preventable with the continued use of proper hearing protection and reduction of workplace noise levels to below 85 decibels. This will benefit not only employees

Who can listen and communicate well throughout their lifetimes, but also helps the rig contractors in terms of reduced exposure to hearing loss compensation claims and a potential for increased general safety and job performance.

8.5.1. Duration (Hours) Sound Level (dB)

Rig operators are in compliance with OSHA Occupational Noise Exposure standard 29 CFR 1910.95 establishes a Permissible Exposure Limit (PEL) for occupational noise exposure and requirements for audiometric testing, hearing protection, and employee training if those sound levels are exceeded.

This regulation defines an “Action Level” (AL) as a “dose” of 50%, which is equivalent to an eight hours’ Time Weighted Average of 85 dB. When noise levels exceed this amount, an effective hearing conservation program is required, which includes as a minimum requirements as following:

- Noise monitoring
- Audiometric testing
- Protection equipment
- Employee training
- Recordkeeping

8.5.2. Noise Monitoring

- When information indicates that any employee’s exposure may equal or exceed an 8 hours’ Time Weighted Average of 85 decibels, rig contractors shall develop and implement a monitoring program.
- RIG CONTRACTORS shall identify employees for inclusion in the hearing conservation program.
- Rig HSE is responsible to identify the Noisy areas in workplace and he shall implement his required responsibilities which is:
  - Identify the areas by safety signs BASED ON THE NOISE SURVEY
  - Insure that any high noise areas provided by the proper selection of hearing protectors
  - Insure that a noise survey is done annually and documented in the rig SMS files
  - The results of the annual noise exposure measurements will be recorded and updated annually Noise Survey Report & Rig Noise Layout” and both shall be displayed in the rig meeting room information board.
- The annual Noise survey shall be done by an approved instrument and to be calibrated as required, RIG CONTRACTORS noise survey shall include all areas
- Instruments used to measure employee noise exposure levels shall be calibrated to ensure measurement accuracy
- Sound level measurements shall be taken at twenty-five meter intervals.
- Monitoring shall be repeated whenever a change in production, process, equipment or controls increases noise exposures to the extent that:
  - Additional employees may be exposed at or above the AL
  - The attenuation provided by hearing protectors being used by employees may be rendered inadequate to meet the requirements.
- RIG CONTRACTORS shall notify each employee exposed at or above an 8 hours’ Time Weighted Average of 85 decibels of the results of the monitoring.
- The RIG CONTRACTORS shall provide affected employees with an opportunity to observe any noise measurements conducted.

8.5.3. Audiometric Testing

- RIG CONTRACTORS shall establish and maintain an audiometric testing by making audiometric testing available to all employees whose exposures equal or exceed an 8 hours’ Time Weighted Average of 85 decibels. The program shall be provided at no cost to employees.
- Audiometric tests shall be performed Annually by a third party licensed or certified audiologist, otolaryngologist, or other physician or by a technician who is certified by the Council of Accreditation in Occupational Hearing Conservation or who has satisfactorily demonstrated competence in administering audiometric examinations, can obtain valid audiograms and can properly use, maintain and check / calibrate audiometers being used.

8.5.4. Audiometric testing frequency

- Audiometric testing shall be done with the fit to work test before sending a new employee to the workplace
- Shall be done annually by third party to all rig employees
- Shall be done if any employee complained for an ear pain due to high interval exposure of high noise limits

8.5.5. Annual Audiogram

- Audiograms will be conducted at least annually after obtaining the baseline audiogram for each employee exposed at or above an 8 hours' Time Weighted Average of 85 decibels.
- Medical department will maintain a record of all employee audiometric test records. This record will include:
  - Name and job classification of the employee
  - Date of the audiogram
  - The examiner's name
  - Date of the last acoustic or exhaustive calibration of the audiometer
  - Employee's most recent noise exposure assessment

8.5.6. Audiometric Evaluation

- Each employee's annual audiogram will be compared to his baseline audiogram by qualified evaluator to determine if a Standard Threshold Shift (STS) has occurred. This comparison may be done by a technician.
- In determining if a STS has occurred, an allowance can be made for the contribution of aging (presbycusis).
  - An audiologist, otolaryngologist, or physician shall review problem audiograms and determine whether there is a need for further evaluation. The rig contractors shall provide to the person performing this evaluation the following information:
  - A copy of the requirements for hearing conservation as set forth in the standard.
  - The baseline audiogram and most recent audiogram of the employee to be evaluated.
  - Measurements of background sound pressure levels in the audiometric test room.
  - Records of audiometer calibrations.
  - If the annual audiogram shows that an employee has suffered a STS, the rig contractors may obtain a retest within 30 days and consider the results of the retest as the annual audiogram.
  - Unless a physician determines that the STS is not work related or aggravated by occupational noise exposure, RIG CONTRACTORS shall ensure that the following steps are taken when a standard threshold shift occurs:
  - Employees whom are not using hearing protectors will be trained, fitted, and required to use hearing protectors if they are exposed to an 8 hours TWA average sound level of 85 decibels or greater.
  - Employees already using hearing protectors shall be retrained, refitted, and required to use hearing protectors and provided with hearing protectors offering greater attenuation if necessary.
  - Rig contractors Human Resource will inform the employee, in writing, within 21 days of this determination, of the existence of a permanent Standard Threshold Shift.
  - The RSTC will counsel the employee on the importance of using hearing protectors and refer the employee for further clinical evaluation if necessary.
  - If subsequent audiometric testing of an employee whose exposure to noise is less than an 8 hours TWA of 90 decibels indicates the STS is not persistent, the Rig HSE:
  - Shall inform the employee of the new audiometric interpretation.
  - May discontinue the required use of hearing protectors for that employee.

8.5.7. Protection Equipment

- the Rig HSE shall ensure that hearing protectors are worn:
  - By any employee who is subjected to sound levels equal to or exceeding an 8 hours TWA of 85 decibels.
  - By any employee who has experienced a persistent STS and who is exposed to 8-hour TWA of 85 decibels or greater.
  - By any employee who has not had an initial baseline audiogram and who is exposed to 8 hours TWA of 85 decibels or greater.

- Employees will be given the opportunity to select their hearing protectors from variety of suitable hearing protectors at no cost to them.
  - Rig contractors Company will provide training in the use and care of all hearing protectors.
  - The Rig HSE will ensure proper initial fitting and supervise the correct use of all Hearing protectors.
  - Employees will be held accountable for not properly using and maintaining the equipment furnished.
  - The Rig HSE will evaluate the attenuation characteristics of the hearing protectors to ensure that a given protector will reduce the individual's exposure to the required decibels.
  - If the 8 hours TWA is over 85 decibels, then the protector must attenuate the exposure to at least 8 hours TWA of 85 decibels or below.
- If the protector is being worn because the employee experienced a STS, then the protector must attenuate the exposure to 8-hour TWA of 85 decibels or below.
- If employee noise exposures increase to the extent that the hearing protectors provided may no longer provide adequate attenuation, the employee will be provided more effective hearing protectors.
  - It is the responsibility of the supervisor to ensure that hearing protectors are worn by

all employees who are exposed to noise levels at or above an eight hour TWA of 90 decibels or if the employee experienced a permanent STS or has not yet had a baseline audiogram.

8.5.8. Employee Training

An in house training shall be performed for each employee including the hearing conservation program and will be conducted by RSTC for one time and repeated refresher training if necessary, this training program will include information on:

- The effects of noise on hearing.
- The purpose and use of hearing protectors.
- The advantages, disadvantages, and attenuation of various types of protection.
- Instruction in the selection, fitting, use and care of protectors.
- The purpose of audiometric testing and an explanation of the test procedures.

Rig contractors Training Matrix will be used to record and track the training dates and the employees in attendance. Information provided in the training program shall be updated to be consistent with changes in protective equipment and work processes.

8.5.9. Recordkeeping

Noise exposure measurement records will be retained for two years. Audiometric test records will be retained for the duration of the affected worker's employment plus thirty years.

You can't control workplace noise without reliable information. Accurate records document what you have done to control noise and inform you when you may need to change your strategy to keep noise under control. Record keeping ties together critical information about all the other tools you use to eliminate or control workplace noise. The table below summarizes the critical record-keeping information for each noise-control tool.

F9. NATURALLY OCCURING RADIOACTIVE MATERIALS (NORM) MANAGEMENT

EGPC

9.1. Scope

This procedure contains the EGPC Minimum rules to protect personnel from the Naturally Occurring Radioactive Material (NORM) hazards. Common hazards when dealing with radioactive sources include health hazards, Monitoring, training worker protection and disposal. These procedures shall be in line with EGPC'S NORM guidelines within the drilling and workover operations in Egypt that should be a main reference for this topic.

9.2. Purpose

Provide guidance on the management of process streams or equipment contaminated with minor concentrations of Naturally Occurring Radionuclides (NORMs).

9.3. NORM in Oil and Gas Production

- NORM is present in trace amounts in crude oil, NGL, and natural gas, but at much lower levels than at accumulation points.
- Only 222Rn (radon) can be easily measured on-site with user-friendly equipment. Other NORM measurements require specialized labs.
- Heavier crude oils may concentrate Thorium (Th) and Uranium (U), making them measurable in residues after deep processing.
- 222Rn follows the gas stream and can concentrate in propane and ethane during fractionation.
- 222Rn decays into short-lived radioactive progeny, except for 210Po, which accumulates as thin films on equipment surfaces.
- Even high 222Rn levels in gas do not create external radiation hazards, except in rare cases for gas caps on storage tanks.
- Uncontrolled gas release poses suffocation and explosion risks far greater than any radiation hazard.
- Typical NORM activity concentrations for oil, NGL, and gas:

	NOR	Bq[NOR]/L[oil]	Bq[NOR]/L[NGL]	Bq[NOR]/m3[NG]
232Th series	232Th	0.03 < > 2	n.r.	n.r.
	228Raeq	n.r.	n.r.	n.r.
	228Theq	n.r.	n.r.	n.r.
238U series	238Ueq	0.0001 < > 10	n.r.	n.r.
	226Raeq	0.1 < > 40	n.r.	n.r.
	222Rneq	n.r.	0.01 < > 1,500	5 < > 200,000
	210Pbeq	n.r.	0.3 < > 230	0.005 < > 0.02
n.r. = not reported.				

9.3.1. Discharge to the environment

While naturally occurring radioactive materials (NORM) are present in trace amounts throughout the oil and gas production process, their discharge to the environment poses minimal risk. On-site measurement is only possible for the radioactive gas radon, and even at its highest levels, radiation hazards outside wellbores and processing facilities are practically nonexistent. The heavier the crude oil, the more potentially concentrated NORM residues become, but these are typically contained within pipelines and tanks. Overall, NORM discharge concerns pale in comparison to the immediate suffocation and explosion risks associated with uncontrolled gas release.

9.3.2. Health hazards of NORM

ORM health hazards, are generally low-level and require specific exposure pathways to pose a threat.

- Inhalation of radon gas and ingesting NORM-contaminated water or food are the primary sources of concern.
- Internal exposure to these alpha-emitting radionuclides can increase the risk of lung cancer and bone tumors, though the effective dose received is typically much lower than other environmental radiation sources like radon in homes or cosmic rays.

However, occupational exposure can be higher within confined spaces or during maintenance activities, necessitating proper ventilation, personal protective equipment, and monitoring procedures to minimize risk.

By maintaining awareness and implementing safety measures, NORM health hazards can be effectively managed within the oil and gas industry.

9.3.3. NORM Management Cycle

The NORM management cycle is a continuous loop in the oil and gas industry that minimizes the environmental and health impacts of naturally occurring radioactive materials (NORM).

- It starts with the identification and characterization of NORM in various production streams, then moves to segregation and control to prevent its spread.
- Waste streams are either treated and recycled or safely disposed of in approved facilities. Throughout the cycle, monitoring and compliance ensure regulations are met and worker safety is prioritized.
- Finally, feedback and improvements are incorporated to optimize the cycle and address emerging challenges.
- This closed-loop approach keeps NORM contained, protecting both the environment and the health of oil and gas workers.

9.3.4. NORM Regulations

While naturally occurring radioactive materials (NORM) are ubiquitous in the oil and gas industry, a patchwork of national and international regulations governs their management. These regulations aim to minimize environmental and health risks through specific requirements for:

- Identification and monitoring: Ensuring NORM presence is acknowledged and tracked throughout the production chain.
- Waste handling: Setting standards for segregation, treatment, recycling, and safe disposal of NORM waste.
- Worker protection: Mandating training, personal protective equipment, and radiation exposure limits for personnel working with NORM.
- Environmental protection: Establishing guidelines for NORM discharge into air, water, and land to safeguard the environment.

Compliance with these regulations is crucial for responsible NORM management, protecting workers, the public, and the environment from unnecessary radiation exposure.

Exposure Limits:

- Public dose limit: 1 mSv/a additional to natural background (ICRP, IAEA, EU).
- Worker exposure: Treated as public with limited exposure time (2,000 hours/year).
- Workplace radon: 1000 Bq/Nm3 (IAEA) and 300 Bq/Nm3 (EU) reference levels.

Note:

- Regulations vary by nation and international agencies (IAEA, EU).
- Always check with local authorities for specific regulations.
- In absence of specific regulations, use IAEA/EU BSS as best practice.

- Explosion and suffocation risks from gas leaks outweigh radiation concern at high radon levels.

9.3.5. NORM Monitoring

Monitoring plays a crucial role in the NORM management cycle. Through regular measurements of NORM activity concentrations in air, water, soil, equipment surfaces, and personnel exposure, potential risks are identified and assessed. This monitoring data informs mitigation strategies like ventilation improvements, waste segregation, and personnel protection measures. By proactively tracking NORM levels, companies ensure compliance with regulations, safeguard worker health, and minimize environmental impact, making monitoring a vital tool for responsible NORM management in the oil and gas industry, where each rig contractor shall provide a NORM monitoring device at each unit.

9.3.6. Training and awareness

Effective NORM management starts with a strong foundation of training and awareness. Educating all personnel involved in oil and gas production about the nature of NORM, potential exposure pathways, health risks, and safety protocols is crucial. Training should cover topics like:

- Identification of NORM hotspots
- Proper use of protective equipment
- Radiation monitoring procedures
- Emergency response plans
- Handling practices

By fostering a culture of awareness and vigilance within the workforce, the industry can prevent accidents, reduce occupational exposure, and ensure responsible handling of NORM throughout the production chain.

9.3.7. Control of NORM sites

Controlling NORM sites in the oil and gas industry demands a multi-pronged approach encompassing prevention, segregation, mitigation, and remediation. Prevention prioritizes identifying and minimizing NORM accumulation from the outset. This involves:

- optimizing production processes to reduce NORM uptake by equipment and materials,
- designing facilities with NORM management in mind
- Implement robust maintenance schedules to catch potential leaks and accumulations early.
- Segregation focuses on isolating NORM-contaminated streams from clean ones, preventing cross-contamination, and simplifying waste management. This includes dedicated pipelines, tanks, and storage areas for NORM-laden materials.

Mitigation tackles existing contamination through techniques like:

- Ventilation systems to disperse radon gas,
- Shielding of high-exposure areas, and
- Regular decontamination procedures for equipment and surfaces.

Finally, remediation addresses historical NORM contamination at legacy sites. This may involve:

- Excavation and disposal of contaminated soil,
- Treatment and reuse of materials where possible, and
- Long-term monitoring to ensure the effectiveness of remediation efforts.

Effective control of NORM sites necessitates stringent adherence to regulations, thorough training of personnel, and continuous monitoring and evaluation of control measures. By adopting a proactive and holistic approach, the oil and gas industry can minimize environmental impact, protect worker health, and ensure responsible stewardship of NORM throughout its operations.

9.3.8. NORM Contaminated Equipment

NORM-contaminated equipment in the oil and gas industry presents both challenges and opportunities for responsible management.

9.3.8.1. Identification and Tracking

Identifying equipment harboring NORM is crucial, as various components like pipes, vessels, and filters can accumulate residues throughout the production process. Regular monitoring with appropriate instrumentation, such as radiation detectors and surface swabs, helps pinpoint hotspots and track contamination levels.

9.3.8.2. Risk Assessment and Segregation

Once identified, equipment needs risk assessment based on the type and intensity of NORM present. High-risk equipment may be isolated and dedicated to NORM handling, while low-risk items can be integrated into regular workflows with appropriate precautions. Proper labeling and segregation are essential to minimize cross-contamination and ensure safe handling.

9.3.8.3. Decontamination and Reuse

Depending on the contamination level and material type, decontamination might be feasible. Techniques like high-pressure cleaning, chemical washes, or sandblasting can remove surface contamination, allowing for equipment reuse in controlled settings. However, it’s crucial to ensure decontamination effectiveness and proper disposal of any generated waste.

9.3.8.4. Disposal and Recycling

Service companies using Norm Devices and rig contractors/ operators having some contaminated closes or material all shall have a valid contract with decontaminate third parties and NORM waste disposal.

9.3.8.5. Design and Maintenance

Proactive considerations during equipment design and maintenance can significantly reduce future NORM contamination issues. Utilizing materials less susceptible to NORM uptake, incorporating easy-to-clean features, and implementing rigorous maintenance schedules all contribute to long-term equipment functionality and minimize the risk of NORM accumulation.

Managing NORM-contaminated equipment demands a multifaceted approach that balances safety, cost-effectiveness, and environmental responsibility. By prioritizing identification, risk assessment, and appropriate handling methods, the oil and gas industry can turn this challenge into an opportunity for sustainable and responsible operations.

9.3.9. Transport of Norm contaminated equipment

Transporting NORM-contaminated equipment requires meticulous planning and stringent protocols to ensure safety and compliance, and is the responsibility of source holder.

9.3.9.1. Pre-transport considerations

- Classification: Categorize equipment based on NORM activity concentration and type (solid, liquid, etc.).
- Packaging and labeling: Utilize certified containers and clear labels that identify NORM presence and radiation levels.
- Documentation: Prepare transport documents outlining equipment details, decontamination records, and emergency procedures.
- Permits and approvals: Obtain necessary permits and approvals from relevant authorities based on regulations and destination.

9.3.9.2. Transport procedures

- Route planning: Choose optimal routes with minimal risk to population and environment.
- Secure transport: Utilize specialized vehicles equipped with proper containment and monitoring systems.
- Trained personnel: Ensure drivers and accompanying personnel are trained in safe handling and emergency response.

9.3.9.3. Safety precautions:

- Radiation monitoring: Continuously monitor radiation levels throughout transport to ensure compliance with exposure limits.
- Emergency preparedness: Have clear communication protocols and emergency response plans in place for potential incidents.
- Post-transport procedures: Decontaminate vehicles and equipment if necessary, and dispose of any generated waste responsibly.

9.3.10. Remediation of NORM Contaminated Land

Remediating NORM (Naturally Occurring Radioactive Material) contaminated land in the oil and gas industry demands careful strategies to protect both human health and the environment.

9.3.10.1. Assessment and Characterization

Identifying the extent and type of NORM contamination is crucial. Soil sampling, radiation surveys, and hydrogeological studies guide the choice of remediation approach.

9.3.10.2. Remediation Options

- Excavation and disposal: Removing and transporting contaminated soil to approved landfills is the most straightforward but costlier option.
- In-situ solidification/stabilization: Binding NORM within the soil using chemical additives can reduce mobility and exposure risks.
- Phytoremediation: Using specialized plants that absorb and metabolize NORM offers a sustainable and cost-effective solution for low-level contamination.
- Natural attenuation: Monitoring and relying on natural processes like adsorption and decay can be suitable for certain sites with low-risk contamination.

9.3.10.3. Implementation and Monitoring

Chosen remediation methods are carefully implemented with safety protocols and environmental controls in place.

Continuous monitoring of radiation levels, air quality, and water quality ensures the effectiveness of the chosen approach and protects neighboring communities.

9.3.10.4. Post-remediation Management

Long-term monitoring and maintenance may be necessary depending on the chosen method and residual contamination levels.

Clear land-use restrictions and record-keeping ensure future generations are aware of potential risks and inform future development decisions.

9.3.10.5. Challenges and Considerations

- Public perception and regulatory compliance are crucial aspects to address.
- Choosing the most appropriate and cost-effective solution requires careful consideration of site-specific factors.
- Balancing risks and benefits, including environmental impact and cost, is critical in decision-making.

By adopting responsible and adaptable strategies, NORM-contaminated land can be remediated, allowing for safe land use and minimizing long-term environmental impact. Remember, proper assessment, informed decision-making, and robust monitoring are key to reclaiming the land and ensuring a sustainable future.

9.3.11. Permanent disposal options

NORM (Naturally Occurring Radioactive Material) waste requires careful handling and permanent disposal to safeguard both human health and the environment. Here’s a peek into the available options:

9.3.11.1. Types of NORM Waste

- Solid waste: Drill cuttings, sludge, decommissioned equipment, contaminated soil.
- Liquid waste: NORM-laden water produced during oil and gas production.
- Gaseous waste: Radon gas found in natural gas streams.

9.3.11.2. Disposal Options

- Deep Geological Repositories: Burying NORM waste in deep, stable geological formations offers long-term containment and isolation.
- Near-Surface Engineered Disposal Facilities: Secure landfills with engineered barriers to prevent NORM migration and radioactive exposure.
- Re-injection Wells: Returning NORM-contaminated fluids to geological formations where they originated can be suitable for specific types of waste.
- Recycling and Reuse: Limited opportunities exist for NORM recycling, such as utilizing NORM-rich materials in radiation shielding or construction materials after appropriate treatment.