

I. Management of Safety:

Introduction:

Safety is part of everyday living. It is an important consideration for everyone in everything he/she does, in the home, at work or play, on streets and highways – wherever he/she goes.

Safe operating practices and procedures are vital in the drilling business because the work is hazardous, involving massive machinery, heavy tools and great physical strength.

When accidents do occur, the work can be a serious peril to life and limb. Drilling personnel must know how to work safely on a rig in order to protect themselves, costly rig equipment, and the expensive hole being drilled.

1- Objective

The key objective of safety in drilling is to provide new employees with a basic orientation of rig operations and safe work practices. Ideally, this should occur before the employee begins work at the rig.

To improve the safety performance of the Service Contractor and the E & P Operator and drilling to assist both in satisfying federal, state and industry regulations and recommended practices.

2- Important rule :

No job is so important and No service is so urgent – that we cannot take time to perform our work safely.

3- Principles:

All workers and contractors, and other persons associated with drilling work shall:

1 Share responsibility to make sure co-workers work within the safety and health rules, and according to safe operational procedures.

2 Work within the rules of operating safely, each type of machine/equipment they may be required to operate.

3 Report immediately to the Manager, all substandard practices and conditions that are likely to cause injury or damage.

4 Report and record, immediately to the Manager, all incidents, injuries and accidents, whether minor or serious, so these can be investigated.

5 Wear proper and appropriate protective equipment, and ensure that such protective equipment is maintained in good condition.

6 Comply with any additional site specific safety regulations

4- **Safety policy:**

It is the policy of the Company to conduct business without risk to all persons directly or indirectly associated with the drilling and to place health and safety equal in importance to productivity, efficiency and cost control.

The company is committed to taking all practicable steps to maintain a healthy working environment and safe working conditions and to define, teach and maintain a safe working environment in compliance with all statutory requirements.

Health, safety and loss control is **everyone's** business and every individual associated with the any job is expected to share in the commitment to avoid all accidents/incidents which may cause personal injury, property damage or loss of any kind. All individuals associated with the job are expected to act safely at all times for their own welfare and that of their co-workers and others associated with the work.

5- **Responsibilities:**

1 The Manager, and all contractors, is to ensure that:

a) All persons associated with the work obey the health and safety rules and comply with policy and procedures at all times;

b) All hazard identification and control procedures are undertaken as prescribed in the Health and Safety in Employment Act 1992;

c) That emergency procedures are in place;

d) Ensure that all planned inspections cover all hazardous situations, plant and procedures under their control;

e) Ensure that all contractors associated with the project have the opportunity to be involved in the development and conduct of items (b), (c) and (d) above;

f) Ensure that all persons associated with the work have been provided with, and understand, information on:

- Hazards they may encounter
- Safety clothing and equipment
- Emergency procedures
- Obligations under the Act.

2 All persons associated with the work, are required to ensure that they:

- a) Comply with the health and safety rules, practices and procedures.
- b) Take all practicable steps to ensure their own safety and the safety of others associated with the job.

6- Jobsite Safety Meeting

Tool box talks of 5 to 10 minutes must be held by superintendents and/or foreman each week. Employees never receive too much training, and therefore our company relies upon jobsite management to provide ongoing and continuous employee training.

The subject to each training talk should be chosen to relate to the type of work that is being performed.

Some examples include:

- The use of safety glasses when using circular saws, grinders, table saws, radial arm saws, jack hammers, power actuated tools, etc.
- The proper set up and use of ladders.
- Hard hats and why they are necessary.
- A discussion of a recent accident and its cause(s).
- A discussion of an old accident.
- A discussion of disciplinary procedures for failure to comply with safety policies

A log of Tool Box Talks must be kept in accordance with the form that follows. One copy should be kept by jobsite management and the other kept on the file in the home office by jobsite location.

7- Tools

1. Tool Casings In Safe Condition
2. Wiring for All Power Tools in Safe Condition
3. Electric Tools Grounded (Unless Double Insulated)
4. Extension Cords Grounded and In Safe Condition
5. Hands Tools in Safe Condition
6. Tools Stored In Designated Location
7. Ladders Free Of Cracks & Damage

8- Housekeeping

1. Aisles, Stairs and Floor Free Of Obstructions
2. Materials Supplies Stored and Piled In Designated Areas
3. Regular Removal of Trash and Debris
4. Are All Work Areas Lighted
5. Work Areas Neat and Orderly

II. Personal Protective Equipment (PPE)

Introduction

In many workplaces, exposure to or contact with harmful agents such as chemicals, infectious agents, sharp objects, or extreme temperatures can create a potential for injury to the body and skin. Wherever practicable, these hazards should be eliminated or reduced through the use of engineering and administrative controls. We can protect against those hazards that continue to exist by using appropriate protective clothing for the job.

1- Responsibilities

- Employer shall ensure that PPE be provided, used, and maintained in a sanitary and reliable condition to prevent injury.
- When employees provide their own PPE, the employer shall assure the adequacy, including the proper maintenance and sanitation, of such equipment.

2- Hazard Assessment and Equipment Selection

- Employers are required to assess the workplace to determine if hazards that require the use of PPE are present. Employers must select and have affected employee's use properly fitted PPE suitable for protection from existing hazards.
- Employers must certify in writing that a workplace hazard assessment has been performed.
- Defective or damaged PPE shall not be used.
- Before doing work requiring of PPE, employees must be trained to know when PPE is necessary, what type is necessary, how it is to be worn, and what its limitations, as well as know its proper care, maintenance, and storage.

3- Establishing a PPE Program

- Sets out procedures for selecting, providing and using PPE as part of an employer's routine operation
- First assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of PPE
- Once the proper PPE has been selected, the employer must provide training to each employee who is required to use PPE

4- Training

- When PPE is necessary
- the type of PPE is necessary.
- How to properly put on, take off, adjust, and wear
- Limitations of the PPE
- Proper care, maintenance, useful life and disposal

5- Engineering Controls

- Initial design specifications
- Substitute less harmful material
- Change process
- Enclose process
- Isolate process
- Ventilation

6- Work Practice Control

- Use of wet methods to suppress dust
- Personal hygiene
- Housekeeping and maintenance
- Job rotation of workers

Protection equipment

1- Eye Protection

In many workplaces, flying particles, dusts, vapors, chemicals or harmful rays can create a potential for eye or face injury. Whenever practicable, these hazards shall be eliminated or minimized through the use of substitution or engineering controls. To protect against those hazards which continue to exist after all such control measures have been implemented, appropriate protective eyewear or face wear must be used.



Figure 65: obligation of eye protection



figure 66: glasses of protection

1-1 Some of the causes of eye injuries

- Dust and other flying particles, such as metal shavings or sawdust
- Molten metal that might splash
- Acids and other caustic liquid chemicals that might splash
- Blood and other potentially infectious body fluids that might splash, spray, or splatter
- Intense light such as that created by welding and lasers

1-2 Safety Spectacles

- Made with metal/plastic safety frames
- Most operations require side shields
- Used for moderate impact from particles produced by such jobs as carpentry, woodworking, grinding, and scaling

2- Head protection

Head injuries may be prevented by using the appropriate protective headwear for the job. Appropriate headwear must protect against the specific hazard presented, provide a comfortable and secure fit, and comply Standard.



Figure 67: heat protection



figure 68: obligation of protection heat

2-1 Some of the causes of head injuries:

- Falling objects
- Bumping head against fixed objects, such as exposed pipes or beams
- Contact with exposed electrical conductors

2-2 Classes of Hard Hats

Class A

- General service (e.g., mining, building construction, shipbuilding, lumbering, and manufacturing)
- Good impact protection but limited voltage protection

Class B

- Electrical work
- Protect against falling objects and high-voltage shock and burns

Class C

- Designed for comfort, offer limited protection
- Protects heads that may bump against fixed objects, but do not protect against falling objects or electrical shock

3- Ear Protection

Exposure to high noise levels can cause hearing loss or impairment. It can create physical and psychological stress. There is no cure for noise-induced hearing loss, so the prevention of excessive noise exposure is the only way to avoid hearing damage. Specifically designed

protection is required, depending on the type of noise encountered and the auditory condition of the employee.



Figure 69: ear protector



figure 70: ear protector

3-1 Instruction to Protect your hearing:

Use hearing protection when:

- Noise levels is 85 dB or Higher
- in high noise areas
- Using power saws, impact tools, etc.

Off the job when shooting, using power tools, etc. Replace worn or broken hearing protectors immediately.

4- Feet protection

In workplaces, falling or rolling objects, sharp objects, exposed energized electrical conductors or other hazards can create a potential for foot injury. Whenever practicable, these hazards shall be eliminated or reduced through the use of proper engineering and/or administrative controls. To protect against those hazards which continue to exist after all such control measures have been implemented, appropriate protective footwear must be used.



Figure 71:choos protector



figure 72:choos protector

4-1 Some of the causes of foot injuries:

- Heavy objects such as barrels or tools that might roll onto or fall on employees' feet
- Sharp objects such as nails or spikes that might pierce the soles or uppers of ordinary shoes
- Molten metal that might splash on feet
- Hot or wet surfaces
- Slippery surfaces

5- Hand protection

In many workplaces, exposure to chemicals, infectious agents, sharp objects, extreme temperatures and other hazards can create a potential for injury to the hand. Wherever practicable, these hazards should be eliminated or reduced through the use of engineering and/or administrative controls. We can protect against those hazards which continue to exist by using appropriate hand protection for the job.



Figure 73:obligation of hand protection



figure 74:types of hand protection

5-1 Hand Hazards

- Cuts and punctures

- Chemical exposure
- Vibration
- Electric shock
- Burns
- Heat & Cold
- Biohazards

5-2 Some of the hand injuries.

- Burns
- Bruises
- Abrasions
- Cuts
- Punctures
- Fractures
- Amputations
- Chemical Exposures

6- Body protection

Many hazards can threaten the torso: heat, splashes from hot metals and liquids, impacts, cuts, acids, and radiation. A variety of protective clothing is available: vests, jackets, aprons, coveralls, and full body suits. Wool and specially treated cotton are two natural fibers that are fire resistant and comfortable since they adapt well to changing workplace temperatures. Duck, a closely woven cotton fabric, is good for light-duty protective clothing.



Figure 75:body protection equipment

6-1 Some of the causes of body injuries:

- Intense heat
- Splashes of hot metals and other hot liquids
- Impacts from tools, machinery, and materials
- Cuts
- Hazardous chemicals
- Contact with potentially infectious materials, like blood
- Radiation

7- Respiratory Protection

Respirators shall be used in the following circumstances:

1. Where exposure levels exceed the permissible exposure limit (PEL), during the time period necessary to install or implement feasible engineering and work practice controls;
2. In those maintenance and repair activities and during those brief or intermittent operations where exposures exceed the PEL and engineering and work practice controls are not feasible or are not required;
3. In regulated areas;
4. Where the employer has implemented all feasible engineering and work practice controls and such controls are not sufficient to reduce exposures to or below the PEL;
5. In emergencies.



Figure 76: types of respiratory protection

7-1 Select RPE

1. Identify the hazard
2. Assess the degree of risk
3. Select appropriate RPE

4. Train in proper use

8- Protection Personal Fall Arrest Systems:

These consist of an anchorage, connectors, and body belt or body harness. It must do the following:

1. Limit maximum arresting force on an employee to 900 pounds when used with a body belt.
2. Limit maximum arresting force on an employee to 1800 pounds when used with a body harness.
3. Be rigged so that an employee can neither free fall more than 6 feet (1.8 meters) nor contact any lower level.
4. Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet (1.07 m). (shock absorber)
5. To keep at least 3 feet clearance from the ground.
6. Have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance 6 feet or the free fall distance permitted by the system, whichever is less.
7. The use of body belts for fall arrest is prohibited (1/1/1998) and a full body harness is required.
8. The anchoring point must withstand a force not less than 5000 pounds.



Figure 77: fall arrest system

9- Fire Safety

Simply fire is a chemical reaction which involves rapid oxidation or burning of a combustible material. In the past, we learned that three elements, fuel, heat, and oxygen were necessary for fire to start and continue burning, hence the fire triangle concept. In recent years this concept

has been expanded to include a fourth element, that of chemical reaction, thus creating the fire tetrahedron.

9-1 Fire tetrahedron



figure 78 : Fire Tetrahedron

1-Fuel (Combustible Substances): Combustible substances exist as Solids, Liquids and gases. Solids : Such as wood, paper, cartons, cloth. Liquids: Such as M. Gasoline, Solvents, Alcohols. Gases : Such as Propane, Butane, Hydrogen.

2-Oxygen: All combustible substances need oxygen to burn. Oxygen is normally available in the air in sufficient quantities (21%). There must be at least 16% oxygen present for a fire to burn. All substances (fuel) will only burn in air if the ratio between the air and the vapor of these substances lies between certain limits. If too much, or too little fuel is present, burning will not take place. These limits are referred to as the lower and upper limits of flammability.

3-Heat (Source of Ignition): Heat is the energy needed to increase the fuel's temperature to the point where sufficient vapors are produced for ignition to occur. The sources of ignition which can produce enough energy are:

- a) Electricity
- b) Smoking
- c) **Cutting and Welding (Hot Works):**
- d) **Open Flames**
- e) **Hot Surfaces:**
- f) Spontaneous Ignition
- g) Static Sparks
- h) **Friction:**

9-2 Classes of Fires:

1- Class A Fires:

- These are fires involving ordinary combustibles:
- Cloth, wood, paper, rubber, many plastics.
- The most effective extinguishing agent is WATER, and dry chemical rated for A, B, and C fires.

2- Class B Fires :

- These are fires involving flammable and combustible liquids such as: Motor Gasoline
- Solvents (Acetone)
- Alcohols.
- The extinguishing agents include Foams

- Dry Chemicals

- Carbon Dioxide.

3- Class C Fires :

- Fires that involves energized electrical equipment where the electrical non - conductivity of the extinguishing agent is of great importance. - The extinguishing agents are: Dry Chemical - Carbon Dioxide - Halons.

4- Class D Fires:

- These are fires involving metals such as: Sodium - Potassium Magnesium.
- Special types of fire extinguishers is used to extinguish such fires

9-3 Fire Extinguishers:

There are six types of Fire Extinguishers:

- Water Fire
- Extinguishers
- Foam Fire
- Extinguishers
- Dry Powder Fire
- Extinguishers

- Carbon Dioxide Fire
- Extinguishers

10- **Warning Systems and Emergency Alarms**

Alarm must be capable of being perceived above ambient noise or light levels by all employees affected.

Tactile devices, vibration, or forced air may be used to alert those who would not otherwise be able to recognize an audible or visual alarm.

The alarm must be distinctive and recognizable as a signal to evacuate the work area or to perform actions designated under your emergency action plan.

Where a communication system also serves as an alarm system, all emergency messages shall have higher priority over all non-emergency messages.

Conclusion :

View the spatiality of drilling technology, and all the drilling rigs, the security aplicate in the drilling operation and in well working is a necessary element, and obligation,

The incidents in drilling rigs and in work-over operation are dangers even killing some times.

Any consign of security has be respected and executed as it is.

