

## CHAPTER 4

### PERSONAL PROTECTIVE EQUIPMENT

#### Section 1. Head Protection.

(a) An approved helmet (safety hard hat) shall be required to be worn by all employees while within working areas, with the exception of self-contained areas such as truck cabs and field offices.

#### Section 2. Eye and Face Protection.

(a) General.

(i) The use of protective eye and face equipment where there is a potential of injury that can be prevented by such equipment shall be required. In such cases, the use of a type of protector suitable for the work to be performed shall be required. No unprotected person shall knowingly be subjected to a hazardous environmental condition. Suitable eye protectors shall be required where machines or operations present the hazard of flying objects, glare, liquids, injurious radiation, or a combination of these hazards.

(ii) Protectors shall meet the following minimum requirements:

(A) They shall provide adequate protection against the particular hazards for which they are designed.

(i) Safety glasses shall be the wrap around type or with side shields.

(B) They shall be reasonably comfortable when worn under the designated conditions.

(C) They shall fit snugly and shall not unduly interfere with the movements of the wearer.

(D) They shall be durable.

(E) They shall be capable of being disinfected.

(F) They shall be easily cleanable.

(G) They shall be kept clean and in good repair.

(iii) Employees whose vision requires the use of corrective lenses and spectacles, and who are required by these rules and regulations to wear eye protection, shall be required to wear goggles or spectacles of one of the following types:

(A) Spectacles whose protective lenses provide optical correction.

(B) Goggles that can be worn over corrective spectacles without disturbing the adjustment of the spectacles.

(C) Goggles that incorporate corrective lenses mounted behind the protective lenses.

(iv) Every protector shall be distinctly marked to facilitate identification of the manufacturer.

(v) When limitations or precautions are indicated by the manufacturer, they shall be transmitted to the user and care taken to see that such limitations and precautions are strictly observed.

(vi) Design, construction, testing, and use of devices for eye and face protection shall be in accordance with *American National Standard for Occupational and Educational Eye and Face Protection, ANSI Z87.1- Current Edition*.

### **Section 3. Occupational Foot Protection.**

(a) Safety shoes or safety boots shall be required to be worn in the working areas.

(b) Metatarsal guards should be required as additional protection where the danger of a crushing injury to the arch of the foot exists.

(c) Safety-toe footwear for employees shall meet the requirements and specifications of *American Society for Testing and Materials (ASTM) F-2412-Current Edition "Standard Test Methods for Foot Protection,"* and *ASTM F-2413-Current Edition, "Standard Specification for Performance Requirements for Protective Footwear"*.

### **Section 4. General.**

(a) Unreasonably loose, poorly fitted or torn clothing shall not be worn.

(b) Clothing which has been saturated with flammable or toxic substances shall be immediately removed, and the affected skin area thoroughly washed.

(c) Hazardous jewelry, such as finger rings, chain bracelets, etc., should not be worn. This is not intended to include wristwatches equipped with bands which will easily break.

(d) Hair of such length that it may become entangled in moving or rotating machinery shall be contained in a suitable manner. Beards and sideburns of employees shall be kept in such condition and of such length so as not to interfere with the proper and efficient use of gas masks, air masks, or other safety apparel or equipment.

(e) Where these rules and regulations prescribe the use of full body harnesses:

(i) An approved full body harness, provided by the employer, suitable for the particular job or hazard exposure shall be worn, and shall be attached by means of a personal fall arrest system to a suitable anchor and adjusted to allow a minimum drop, in no case greater than six (6) feet;

(ii) A separate life line shall be provided for each employee exposed to the particular job or hazard;

(iii) Personal fall arrest system components, ie., anchorage, connectors, full body harness, etc., shall be inspected prior to each use and shall be repaired or replaced if found to be defective.

(f) Flame Resistant Clothing (FRC) shall be worn by all employees on the drilling site location within the radius of the rig anchors or within seventy five (75) feet of the well bore, whichever is greater, once the well has been drilled below surface casing and until the well is shut in for demobilization, with the exception of self-contained areas (such as truck cabs and field offices) and employees changing into or out of the FRC garments.

(i) Flame Resistant Clothing (FRC) for employees shall meet the requirements and specifications of NFPA 2112 Standard on Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire, Current Edition, and NFPA 2113 Standard on Selection, Care, Use, and Maintenance of Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire, Current Edition.

(ii) A sign shall be conspicuously displayed at the beginning of all entrances to the well locations stating "Flame Resistant Clothing (FRC) is required to be worn".

(g) Special protective wearing apparel shall be provided and required to be worn as deemed necessary because of an unusually hazardous situation not normal to the job.

## **Section 5. Emergency Equipment.**

(a) Any area suspected of insufficient oxygen or contamination by flammable or toxic gases, such as Hydrogen Sulfide (H<sub>2</sub>S) vapors or dust shall not be entered until sufficient tests have been made with appropriate instruments to determine extent of hazard and area is purged to

reduce the hazard to an allowable concentration.

(i) In the event of the presence of H<sub>2</sub>S the following limits of exposure shall apply:

(A) Ceiling value = 10 ppm

(B) Time weighted average (TWA) = 10 ppm

(C) Acceptable maximum peak above the acceptable ceiling concentration for an eight (8) hour shift = 50 ppm. (10 minutes once only if no other measurable exposure occurs.)

(b) In the case of toxic atmosphere or lack of oxygen, any employee entering such area shall be required to use the proper respiratory equipment.

(c) In addition, any employee entering such atmospheres as specified in 5.(b) of this Section shall be required to wear a safety belt with attached tail line for emergency retrieval. Employee shall be stationed outside the hazard area with the proper rescue equipment to assist in case of emergency, and to attend to the retrieve end of the tail line.

(d) Canister-type filter masks shall be used only in an area where sufficient oxygen exists (at least 16 percent by volume).

(e) Canister-type filter masks shall be used only in areas where their capabilities will not be exceeded. Such canisters shall be proper for the hazardous contaminant.

(f) In those atmospheres where tests indicate oxygen content is less than nineteen and a half (19.5) percent oxygen by volume), employees shall be provided with and required to use self-contained breathing apparatus (SCBAs); or

(g) Supplied-air breathing apparatus may be used instead of SCBAs in subparagraph f. of this Section. In the event supplied-air breathing apparatus are used, they shall be selected, used and maintained in accordance with *Subpart I, Section 3.-Respiratory Protection, of the State of Wyoming Occupational Health and Safety 1910 - General Rules and Regulations.*

(h) All respirators on work locations shall be:

(i) Housed in a proper cabinet or other appropriate container located close to, but not within, the potential area of use;

(ii) Inspected at least monthly and documented for constant service readiness; except, if rented, prior to each use, but at least monthly.

(NOTE: Caution should be observed when using SCBAs at low temperatures due to pressure drop.)

(iii) Serviced and brought back to readiness after each usage.

(i) All employees shall be trained in the use and operation of employer provided breathing equipment available on the job and employees whose facial contours, physical impairments, hair or beard styles that would interfere with the seal necessary for respiratory protective devices, shall not enter areas in which such protection devices may be necessary.

(j) The well operator, prior to commencement of work in an area (i.e. clearing stage of the well site), shall provide provisions for contacting the nearest and other appropriate emergency medical services in case of serious injury.

(i) No derrick shall be rigged up on a work site until the emergency medical service communications has been established and tested.

(ii) A poster shall be fastened at or near emergency communications devices plainly stating the phone numbers of emergency medical services within the district of the work site.

(k) There shall be provided a first aid kit (not less than twenty four (24) unit type) that shall be maintained at the drilling site and inspected at frequent intervals. The first aid kit shall be replenished when any unit in the kit reaches a twenty five (25) percent depletion of that unit.

(i) First aid station(s). First aid station(s) shall be located as close as practicable to the highest concentration of personnel.

(ii) First aid station(s) shall be well marked and available to personnel during all working hours.

(iii) One person holding a valid first aid certificate shall be responsible for the proper use and maintenance of the first aid station(s).

(iv) A "unit" is defined as a package, bottle or other container which contains a specific item of first-aid material. For example, a bottle of Hydrogen Peroxide, a box of adhesive bandages, a box with a roll of gauze bandage, etc.

(v) In addition to the first-aid kit which must be kept on the equipment or at the place of work, there shall be available within the closest practicable distance from the operations (not to exceed five (5) minutes) the following items:

(A) Two (2) adjustable medical splints; one (1) arm, one (1) leg;

(B) Two (2) all wool blankets or blankets equal in strength and fire resistance;

(C) One (1) stretcher

(l) One (1) or more employees on each drilling site shall be adequately trained to render first aid and cardiopulmonary resuscitation (CPR), and shall have a valid certificate from the American Red Cross or equivalent training that can be verified by documentary evidence, and who will always be present.

(m) Where the eyes or body of personnel may be exposed to injurious materials, eyewash equipment for emergency use shall be provided. For information on emergency eyewash and shower equipment see, *American National Standard Institute (ANSI) Z358.1-Current Edition*.

## CHAPTER 6

### FACILITIES

#### Section 1. Ladders, Stairways, Runways, Floors and Platforms.

(a) General Requirements.

(i) Every scaffold, stage, walkway, working platform, stairway and ladder, whether temporary or permanent, shall be constructed and maintained in safe condition and shall not be altered or moved while in use.

(ii) Work areas shall be kept clean and free of debris.

(iii) Walkways, stairways and exits shall be kept clear to provide unimpeded ingress and egress at all times.

(iv) Safe ingress to, and egress from, all work areas shall be provided.

(v) Every stairway, ladder, ramp, runway, floor and platform shall be kept reasonably free of objects and substances which may create a slipping or tripping hazard, or prevent or hinder the escape of workmen in an emergency.

(A) Standard railing shall be provided on the open sides of all exposed stairways and stair platforms with four or more risers.

(vi) With the exception of exit and entrance openings, and loading and unloading areas, standard railing with midrail, and four (4) inch toe-board shall be installed at the outer edge of any floor, platform, walk-way, ramp or runway which is four (4) feet above the ground, or another floor or working level. Where railings are not feasible, chains or cable of suitable strength may be used.

(A) A standard railing shall not be used for other than personnel protection purposes. For definition and construction requirements of a standard railing, refer to *Subpart D of the State of Wyoming Occupational Health and Safety 1910 - General Rules and Regulations*.

(B) A guardrail used and/or needed for the purpose of actual or potential containment of equipment or material shall be of such construction and strength as to effectively contain the full load or stress which may be anticipated to be applied upon it. (For example, if twenty-five (25) pieces of six (6) inch pipe are contained by a guardrail, or any attachment to the guardrail, such guardrail and attachment must be capable of safely holding that quantity of pipe, plus an additional allowance for at least two (2) employees, assuming 200 pounds per

employee).

(vii) A stabbing board shall be provided for and used by personnel when working above the derrick floor while running casing or tubing.

(A) A stabbing board shall consist of at least one (1) three (3) inch by twelve (12) inch number one fir plank or metal of at least the same width and strength. If wood is used, expanded metal or a cable shall be fastened to the underside of the plank along its full length, and each end of the stabbing board shall be fastened to the derrick with a wire rope at least one-fourth (1/4) inch in diameter or chain of equivalent strength.

(B) On single stand rigs where there is insufficient room for twelve (12) inch wide stabbing boards, a special stabbing platform shall be designed which will include all the safety features outlined in (a) above.

(viii) A stairway shall be installed beside the ramps which shall extend from the ground to the derrick floor.

(ix) Every opening in a derrick floor shall be covered or guarded when not being used.

(x) A derrick floor, derrick walk or engine room floor shall not be used as a storage platform for equipment or material that is not required for immediate use, unless:

(A) the material or equipment is properly racked or stored, and

(B) does not cause congestion of work areas or walkways.

(xi) On all derricks, ladder platforms shall be installed adjacent to, and provide unimpeded access to, the fourble board.

(xii) Ladder platforms shall be located at the crown of all drilling rigs.

(xiii) With the exception of the stabbing board, every platform erected on the inside of a derrick shall completely cover the space from the working edge of the platform back to the legs and girts of the derrick.

(xiv) All platform planks shall be secured.

(xv) A safety cable shall be secured to the full length of the underside of each working platform in the derrick.

(xvi) Each mast or derrick platform shall be constructed, maintained and secured



to the mast or derrick to withstand the weight of employees or other stresses which may normally be placed upon it.

(xvii) The board fingers and diving board shall be connected to their supporting beam with wire rope not less than one-fourth (1/4) inch in diameter, or chain of equivalent strength.

(xviii) Unattached tools or material of any kind shall not be placed in the mast or derrick above the floor unless there is occasion for their immediate use.

(xix) There shall be no openings large enough to permit a person to fall between the beams or main supports of framework of the crown.

## **Section 2. Fixed Ladders.**

(a) Design requirements and considerations. All ladders, appurtenances, and fastenings shall be designed to meet the following load requirements:

(i) The minimum design live-load shall be a single concentrated load of 200 pounds.

(ii) The number and position of additional concentrated live-load units of 200 pounds each as determined from anticipated usage of the ladder shall be considered in the design.

(iii) The live-loads imposed by persons occupying the ladder shall be considered to be concentrated at such points as will cause the maximum stress in the structural member being considered.

(iv) The weight of the ladder and attached appurtenances together with the live-load shall be considered in the design of rails and fastenings.

(b) Specific features-Rungs and cleats.

(i) All rungs shall have a minimum diameter of three-fourths (3/4) inch for metal ladders, and a minimum diameter of one and one-eighths (1-1/8) inches for wooden ladders.

(ii) The distance between rungs, cleats, or steps shall not exceed twelve (12) inches, measured from the top of rung, cleat or step to the top of the next rung, cleat or step, and shall be uniform throughout the length of the ladder.

(iii) The minimum clear length of rungs or cleats shall be sixteen (16) inches.

(iv) Rungs, cleats, and steps shall be free of splinters, sharp edges, burrs, or projections which may be a hazard.

(v) Where there is a walking/working platform or access to a ladder twenty-four (24) inches or more above the floor or ground level, a step or steps of not more than twelve (12) inches riser height shall be provided for access.

(vi) Side rails which might be used as a climbing aid shall be of such cross-sections as to afford adequate gripping surface without sharp edges, splinters or burrs.

(vii) Fastenings shall be an integral part of fixed ladder design.

(viii) All splices and connections shall have smooth transition with original members and with no sharp or extensive projections.

(ix) Adequate means shall be employed to protect dissimilar metals from electrolytic action when such metals are joined.

(x) All welding shall be in accordance with the "*Code for Welding in Building Construction*" (AWS D1.0-66).

(xi) Protection from deterioration. Metal ladders and appurtenances shall be painted or otherwise treated to resist corrosion and rusting when location demands. When different types of materials are used in the construction of a ladder, the materials used shall be so treated as to have no deleterious effect one upon the other.

(c) On the climbing side of fixed ladders, the perpendicular distance from the centerline of the rungs to the nearest permanent object shall be thirty-six (36) inches for a pitch of 76°, and thirty (30) inches for a pitch of 90°, with minimum clearances for intermediate pitches varying between these two limits in proportion to the slope, except as provided in paragraph (3) of this subsection.

(i) Ladders without cages or wells. A clear width of at least fifteen (15) inches shall be provided each way from the centerline of the ladder in the climbing space, except when cages or wells are necessary.

(ii) Clearance in back of ladder. The distance from the center-line of rungs, cleats or steps to the nearest permanent object in back of the ladder shall be not less than seven (7) inches. When unavoidable obstructions are encountered, minimum clearances for the two rungs on either side of the obstruction shall be measured vertically from the obstruction no less than one and a half (1½) inches to the upper rung and four and a half (4½) inches to the lower rung.

(iii) Clearance in back of grab bar. The distance from the centerline of the grab

bar to the nearest permanent object in back of the grab bar shall not be less than four (4) inches. Grab bars shall not protrude on the climbing side beyond the rungs of the ladder which they serve.

(iv) Step-across distance. The step-across distance from the nearest edge of ladder to the nearest edge of equipment or structure shall be not more than 12 inches, or less than two and a half (2½) inches.

(d) Cages or wells shall be provided on ladders of more than twenty (20) feet to a maximum unbroken length of thirty (30) feet.

(i) Cages shall extend a minimum of forty-two (42) inches above the top of landing, unless other acceptable protection is provided.

(ii) Cages shall extend down the ladder to a point not less than seven (7) feet nor more than eight (8) feet above the base of the ladder, with bottom flared not less than four (4) inches, or portion of cage opposite ladder shall be carried to the base.

(iii) Cages shall not extend less than twenty-seven (27) nor more than twenty-eight (28) inches from the centerline of the rungs of the ladder. Cage shall not be less than twenty-seven (27) inches in width. The inside shall be clear of projections. Vertical bars shall be located at a maximum spacing of 40° around the circumference of the cage; this will give a maximum spacing of approximately nine and a half (9½) inches, center-to-center.

(iv) Ladder wells shall have a clear width of at least fifteen (15) inches measured each way from the centerline of the ladder. Smooth-walled wells shall be a minimum of twenty-seven (27) inches from the centerline of rungs to the well wall on the climbing side of the ladder. Where other obstructions on the climbing side of the ladder exist, there shall be a minimum of thirty (30) inches from the centerline of the rungs.

(e) Landing platforms. When ladders are used to ascend to heights exceeding twenty (20) feet (except on chimneys), landing platforms shall be provided for each thirty (30) feet of height or fraction thereof except that, where no cage, well, or ladder safety device is provided, landing platforms shall be provided for each twenty (20) feet of height or fraction thereof. Each ladder section shall be offset from adjacent sections. Where installation conditions (even for a short, unbroken length) require that adjacent sections be offset, landing platforms shall be provided at each offset.

(i) Where an employee has to step a distance greater than twelve (12) inches from the centerline of the rung of a ladder to the nearest edge of structure or equipment, a landing platform shall be provided. The minimum step-across distance shall be two and a half (2½) inches.

(ii) All landing platforms shall be equipped with standard railings and toeboards, so arranged as to give safe access to the ladder. Platforms shall be not less than twenty-four (24) inches in width and thirty (30) inches in length.

(iii) One rung of any section of ladder shall be located at the level of the landing laterally served by the ladder. Where access to the landing is through the ladder, the same rung spacing as used on the ladder shall be used from the landing platform to the first rung below the landing.

(f) Ladder extensions. The side rails of through or side-step ladder extensions shall extend three and a half (3½) feet above parapets and landing. For through ladder extensions, the rungs shall be omitted from the extension and shall have not less than eighteen (18) nor more than twenty-four (24) inches clearance between rails. For side-step or offset fixed ladder sections, at landings, the side rails and rungs shall be carried to the next regular rung beyond or above the three and a half (3½) foot minimum.

(g) Grab bars shall be spaced by a continuation of the rung spacing when they are located in the horizontal position. Vertical grab bars shall have the same spacing as the ladder side rails. Grab-bar diameters shall be the equivalent of the round-rung diameters.

(h) Ladder safety devices may be used on tower, water tank and chimney ladders over twenty (20) feet in unbroken length in lieu of cage protection. No landing platform is required in these cases. All ladder safety devices such as those that incorporate lifebelts, full body harnesses, friction brakes, and sliding attachments as an integral unit shall meet the design requirements of the ladders they serve.

(i) The preferred pitch of fixed ladders shall be considered to come in the range of 75° and 90° with the horizontal.

(i) Fixed ladders shall be considered as substandard if they are installed within the substandard pitch range of 60° and 75° with the horizontal. Substandard fixed ladders are permitted only where it is found necessary to meet conditions of installation. This substandard pitch range shall be considered as a critical range to be avoided, if possible.

(ii) This section covers only fixed ladders within the pitch range of 60° and 90° with the horizontal.

(iii) Ladders having a pitch in excess of 90° with the horizontal are prohibited.

(j) All ladders shall be maintained in a safe condition. All ladders shall be inspected regularly, with the intervals between inspections being determined by use and exposure.

(k) Ladder requirements not specifically referenced in this section shall be in accordance

with the State of Wyoming Occupational Health and Safety 1910 - General Rules and Regulations, Subpart D, Walking and Working Surfaces.

(l) All mast ladders on all drilling rigs are exempted from the requirements of subsections (b)(i), (ii), (iii) and (c) (ii) and (d) of this section, provided the employer makes available and requires the use of an approved personal fall arrest system.

### **Section 3. Construction and Loading of Pipe Racks.**

(a) General requirements.

(i) Construction of pipe racks shall be so designed as to support any load to be placed thereon.

(A) Pipe racks shall be set level laterally on a stable foundation. They may slope front to back to facilitate laying down or picking up pipe.

(B) Provision shall be made to prevent pipe, tubular material or other round material from rolling off pipe racks.

(ii) No employee shall go between pipe racks and a load of pipe during loading, unloading and transferring operations.

(A) Pipe shall be loaded and unloaded, layer by layer, with the bottom layer pinned or blocked securely on all four (4) corners, and each successive layer shall be effectively chocked or blocked.

(B) Spacers shall be used, and evenly spaced, between the layers of pipe or material on the rack.

(C) When pipe is being moved or transferred between pipe racks, truck and trailer, the temporary supports for skidding or rolling shall be so constructed, placed and anchored as to support the load that is placed on them.

(iii) During weather of potential freezing, pipe standing on end shall be so positioned as to afford proper drainage.

### **Section 4. Flammable Liquid Handling and Storage (Flashpoint Less Than 100°F).**

(a) Requirements.

(i) Only approved containers, or approved safety containers, shall be used as containers of flammable liquids having a flashpoint lower than 100°F., such as gasoline, naphtha, etc.

(ii) Smoking or open flames shall not be allowed within seventy five (75) feet of the handling of flammable liquids. Any engine being refueled shall be shut off during such refueling.

(iii) Liquefied Petroleum Gas (LPG) shall be handled in accordance with the *State of Wyoming Occupational Health and Safety 1910 - Genral Rules and Regulations, Subpart H*, in all operations.

(iv) An electrical bond shall be maintained between containers when a flammable liquid is being transferred from one to the other.

(v) Storage of flammable liquids shall be in approved containers.

(vi) Discharge nozzles and valves shall be of the quick, self-closing type.

(vii) Except for the fuel in the tanks of the operating equipment, which may include a totally-enclosed day tank system, no gasoline or other flammable fuel shall be stored closer than seventy five (75) feet of a well.

(A) A totally enclosed day tank system means that the tank capacity and its piping shall be no greater than that necessary for twenty four (24) hours continuous operation.

(viii) Drainage from any fuel storage shall be in a direction away from the well.

## **Section 5. Illumination Requirements.**

(a) For the purpose of these Rules and Regulations, all foot-candle power readings shall be taken 18 inches above all walking and working surfaces.

(b) Lighting around a derrick shall be sufficient to provide illumination at all times of:

(i) An average of five (5) footcandle power on the whole of the derrick floor, with no less than three (3) footcandle power at any point; and

(ii) A minimum of three (3) footcandle power at all other walking and working surfaces.

**(NOTE:** The above are minimum requirements, and many circumstances, including weather,

may warrant higher lighting values.)

### **Section 6. Hoisting Lines, Wire Rope, Fiber Rope and Chains.**

(a) Every hoisting line (wire rope) used in drilling operations shall have a minimum safety factor of three (3), determined as follows:

Safety =  $\frac{B}{W}$  (Nominal breaking point of the wire rope in pounds)

Factor W (Calculated total static load in pounds)

(i) A minimum safety factor of two (2) shall be permitted only in the following operations:

(A) On rotary drilling line when setting casing, or

(B) When pulling on stuck pipe and similar infrequent operations.

(b) All hoisting lines (wire ropes) shall be visually inspected daily by a drilling rig competent person, and shall be thoroughly inspected at least each thirty (30) days and documented. The drilling line shall have a documented ton-mile program. The ton mile program is not applicable to CBMNG drilling rigs. However, the daily visual inspection and thirty (30) day documented inspections are required for all rigs. A record shall be made of each inspection with any defects noted. Such written reports shall be kept on file at the drilling rig. Any deterioration noted as a result of the inspection shall be recorded and determination made as to whether the wire rope should be slipped or replaced. When the wire rope is slipped or replaced, it shall be recorded on the inspection report, as to date and length of wire rope removed. A hoisting line shall be removed from service when any of the following conditions exist:

(i) When three (3) broken wires are found in one lay of six (6) by six (6) wire line;

(ii) When six (6) broken wires are found in one lay of six (6) by nineteen (19) wire line;

(iii) When nine (9) broken wires are found in one lay of six (6) by thirty-seven (37) wire line;

(iv) When eight (8) broken wires are found in one lay of eight (8) by nineteen (19) wire line;

(v) When wire lines not described herein are found to have four (4) percent of the total number of wires composing such wire broken in one lay;

- (vi) When marked corrosion appears;
- (vii) When corroded or broken wires at end connections are noted;
- (viii) When end connections are corroded, cracked, bent, worn or improperly applied; or,
- (ix) When evidence of kinking, crushing, cutting or unstranding are noted.

(c) The wire rope (wire line) manufacturer's recommendations and/or a ton-mile cutoff program shall be utilized.

(d) The dead end of the hoisting line (wire rope) shall be fastened securely to the drum.

(e) The hoisting line (wire rope) shall not be removed from the drum until:

(i) The traveling blocks are laid on the derrick floor, or

(ii) The traveling blocks are held suspended by a separate wire rope or chain of equivalent strength.

(f) The hoisting line (wire rope) shall not be in direct contact with any derrick member, any stationary equipment or material in the derrick, except the crown block and any traveling block sheaves, a line spooler, a line stabilizer or weight indicator.

(g) Every overhead sheave or pulley on which a line spooler counterweight rope runs shall be fastened securely to its support.

(h) All wire rope shall be periodically inspected. A copy of the inspection reports of each running cable shall be maintained on the rig and readily accessible to the department.

(i) "Periodically" means at least monthly.

(ii) Wire rope shall be removed from service when defects as shown at *Section 6. (b)(v) through (ix)* are detected.

(i) Chains.

(i) The practice of placing bolts or nails between two links to shorten chains is prohibited.

(ii) Splicing or repairing broken chains shall be accomplished by use of repair devices approved by the chain manufacturer. The use of welding, brazing, bolts, wire, nails and



other such methods or devices is prohibited.

(j) Winches and cables.

(i) Cable shall be in good repair. When respooling, care shall be used to avoid kinking. Cable clamps and thimbles, properly installed, shall be used in preference to knotting the cable.

(ii) Personnel shall not stand near, step over or go under a cable while it is under tension.

(k) Laying out and picking up cable.

(i) Winch operators feeding the cable in or out of the truck shall have the emergency horn in close reach. The cable shall not be guided or held while it is being fed into the line guide.

(ii) When cable handlers are required to stand on the platform of a moving vehicle, they shall face in the direction of travel and shall hold on to the vehicle with at least one hand.

(l) Tugger lines shall not be used to hoist personnel unless the manufacturer specifically allows the hoisting of personnel and specifies the use of a bosun's chair (boat-swan) and full body harness, or equivalent, that is attached to the tugger line.

(i) if there is no manufacturer's guidance on hoisting personnel, the tugger line with proper rating capacity may be used to reach an otherwise inaccessible location, if a bosun's chair (boat-swan) with full body harness is used, and the tugger line meets the following requirements:

(A) Self centering, that when released returns to the center position and has locking/braking capability.

(B) Control lever shall be attended at all times while lifting, stabilizing, or lowering of personnel.

(C) Lifting cable will be a minimum of 3/8-inch diameter, and all hoisting equipment shall have a minimum workload of 4,000 pounds.

(D) All connections shall meet ANSI standards.

(m) Chain used in connection with drilling or production operations shall be suitable for the type of service. Chain used in a spinning line, in a tong line or on a cathead shall be of an

approved type. Certified-type chain, with individual lengths marked at intervals of five (5) feet or less by embossing or another approved method, may be used when purchased in bulk, provided the vender or the manufacturer has furnished the user with a proof-test record which includes all lengths in the entire length of chain pulled to approximately one-half (2) the breaking strength of the chain. All chain lines to tongs shall be three-eighths (3/8) inch or heavier, with an approximate breaking strength of 20,000 pounds or more.

(n) Each cathead using chain shall be equipped with a manually operated cathead clutch, or with another device adequate to keep the rotation of the cathead under control when it is in use. The clutch or device shall be the "non-grab" type and shall release automatically when not manually held in the engaged position.

(o) Every chain used in a spinning line shall have a fiber tail rope between eight (8) inches and twelve (12) inches in length fastened to the pipe end of the chain.

(p) Any chain shall be discarded or repaired if it has been stretched to the point where links bind, kink, lock, or it has been broken.

(q) No repair is permitted in a spinning chain.

(r) Connections. Connections between lengths of cathead chain, tong chains and spinning chain shall be of the connecting link or swivel type and of a strength equal to the lighter chain. Connecting links and swivels shall be of a size and type suitable for the chain in use.

(s) Fiber ropes cut, frayed (through one (1) or more lays) or that have been in contact with caustic acid or any other chemical that might weaken them, shall be replaced immediately.

## **Section 7. Equipment.**

(a) Requirements:

(i) Traveling blocks shall be equipped with securely attached sheave guards.

(ii) Any slip hook used for lifting shall be equipped with a safety latch.

(iii) Every traveling block, hook, elevator, and elevator link or traveling equipment shall be reasonably free of projecting bolts, pins and parts.

(iv) A blunt, smooth-edged, anti-rope fouling device shall be installed on all manually operated rope catheads.

(v) The key seat and projecting key on a cathead shall be covered with a smooth thimble or plate.

(vi) The operator of a cathead shall keep his operating area clear at all times. That portion of the catline not being used shall be kept coiled or spooled.

(vii) When the cathead is unattended, no rope or line shall be left wrapped on or in contact with the cathead.

(viii) A qualified employee shall be at the controls while a cathead is in use. He shall stop the rotation of the cathead immediately in event of an emergency.

(ix) No splice shall be allowed to come into contact with the friction surface of the cathead.

(x) Each corner of a crown block shall be securely bolted or welded to the mast or derrick.

(xi) When bumper blocks are attached to the underside of the crown beams, a safety cable or strap shall be secured along their full length.

(xii) Each finger of a finger board shall be bolted or welded to its support beam.

(xiii) Any counterweight above the derrick floor, when not fully encased or running in permanent guides, shall be securely anchored to the derrick by a safety chain or wire rope safety line.

(xiv) Wire rope used to connect a tong to the counter weight shall be of a sufficient strength.

(xv) Every drilling rig shall be equipped with a reliable weight indicator.

(xvi) Any weight indicator hung above the floor shall be secured to the derrick by means of a wire rope, safety cable or chain.

(xvii) Every test plug used above the derrick floor shall be attached to the elevator links by safety cable or chain.

(xviii) The operator shall not leave the brake without tying the brake down or securing it with an adequate counterbalance unless the drawworks are equipped with an automatic feed control. (See exception to this rule at *Chapter 5, Section 1.(a) (vii) (C)*)

(xix) The operator shall not engage the rotary clutch until the rotary table is clear of personnel and material.

(xx) The operator shall not leave the controls while the hoisting drum is in motion, except when drilling. (See exception to this rule at *Chapter 5, Section 1.(a) (vii) (C)*)

(xxi) Each rotary tong shall be securely attached to the derrick or a back-up post and shall have a minimum breaking strength at least equal to the breaking strength of the cable.

(xxii) Any wire rope connections used to attach safety cables to the derrick or back-up post shall have a minimum breaking strength at least equal to the breaking strength of the cable.

(xxiii) If lubrication fittings are not accessible with guards in place, machinery shall be stopped for oiling and greasing.

(xxiv) The drawworks shall not be operated without all guards in position and properly maintained.

(xxv) All air compressors shall have at least one (1) air pressure regulator to control proper air flow.

(xxvi) The safety relief valve (safety pop-off) on the main air tank shall be checked periodically and kept in proper working order.

(xxvii) All valves and pressure control devices shall be kept in proper working order.

(A) There shall be no valve in the discharge opening of a safety pressure relief device or in the discharge pipe connected thereto.

(B) The piping connected to the pressure side and discharge side of a safety relief device shall not be smaller than the normal pipe size openings of the said device.

(C) The piping on the discharge side of the safety relief device shall be securely tied down.

(D) The piping from the discharge side of the safety relief device shall be sloped in order to drain liquids.

(xxviii) Hydraulic pressure lines shall not be subjected to pressures exceeding those recommended by the manufacturer.

(xxix) The brakes, linkage and brake flanges of the drawworks shall be checked each day.

(xxx) A mud box or other effective means shall be provided on all rigs to convey any fluids away from the derrick floor, while pulling drill stem tests or breaking wet joints.

(xxxii) Hoses, lines or chains shall not be permitted to come into contact with the rotary table while it is in motion.

(xxxiii) When visibility on the rig floor is obscured, no worker shall be required or permitted to work on the rig floor while the rotary table is in motion.

(xxxiiii) [Reserved]

(xxxv) A blunt smooth-edged divider to separate the first wrap of a line on a cathead shall be installed on all manually-operated rope catheads and the clearance between the device and the friction surface of the cathead shall not exceed one-fourth (1/4) inch .

(xxxvi) The friction surface and flanges of a cathead on which a rope is manually operated shall be smooth and the diameter of the cathead between the flanges shall be uniform throughout its length with an allowable tolerance of three-eighths (3/8) inch.

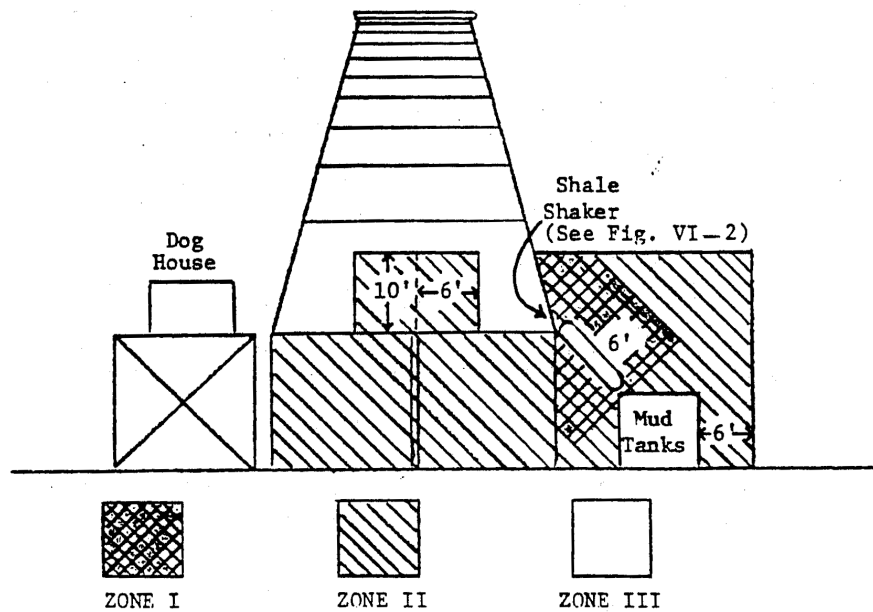
(xxxvii) Hydraulic tong control mechanism.

(A) The control device on power tongs shall be designed or guarded to prevent accidental activation.

(xxxviii) Pull-back post. A kelly pull-back post with attached snatch block to a sheave, roller or similar device (onto or through which is run the pull-back rope), shall be provided for pulling the kelly back to the rat hole. The pull-back post shall be secured either to the derrick foundation side sills or floor sills, and shall not be attached to or in contact with the derrick legs, girts, or braces.

(xxxix) Whenever drill pipe, drill collars or tubing are racked in the derrick, provisions shall be made for the complete drainage of any fluids or gases in the stands.

**FIGURE 6-1**



**Section 8. Area Classifications, Facilities and Electrical Equipment.**

(a) Area Classifications. Areas on gas and oil drilling rigs are classified as Zones I, II and III. These zones classify the area of the facilities as well as the classification for electrical equipment.

(i) Zone I includes a radial distance within six (6) feet of the shale shaker.

(A) When the shale shaker is enclosed so as not to provide adequate ventilation, the area within the enclosure shall be classified as Zone I.

(ii) Zone II areas include:

well bore;

- (A) Areas within six (6) feet horizontally and ten (10) feet vertically of the

- (B) confined space under the drilling floor;

- (C) areas within six (6) feet of the mud tanks;

- (D) where the mud tanks are closed in with walls, the complete area of the enclosure.

- (E) CBMNG Drilling Rigs will not operate their running lights, tail lights, or other vehicle lights, or other non-explosion proof lights while drilling the well. Once the well is capped with a wellhead, rig lights can be operated.

(iii) Zone III areas are those other areas of the well site not identified as Zones I or II above.

(b) Electrical Equipment.

(i) Zone I electrical equipment shall be a follows:

- (A) Motors - three-phase totally enclosed fan cooled (TEFC) induction-type or explosion-proof.

- (B) Flexible cords - type SO, ST, STO, Locomotive Cable, or equivalent.

- (C) Switches, circuit breakers, motor controllers and fuses - NEMA type 7-9 (explosion-proof).

- (D) Plugs and receptacles - totally enclosed, gasketed and with threaded hubs (commonly referred to as "vapor proof").

- (E) Lighting - not permitted within Zone I unless explosion-proof.

(ii) Zone II electrical equipment shall be as follows:

- (A) Motors - TEFC (totally enclosed, fan cooled) or equivalent.

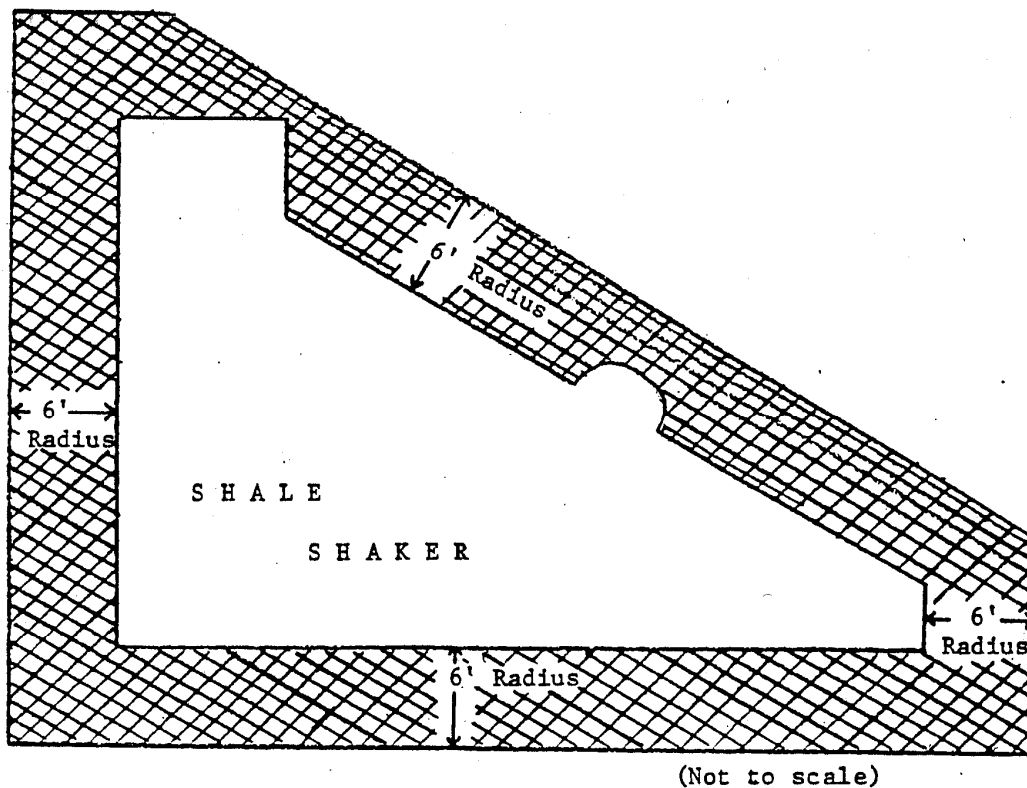
- (B) Flexible cords - type SO, ST, STO, Locomotive Cable, or equivalent.

- (C) All other electrical equipment - totally enclosed, gasketed and with threaded hubs (commonly referred to as "vapor-proof").

(iii) Zone III electrical equipment, wiring, fixtures and cords shall be installed and used in accordance with the *State of Wyoming Safety 1910 - General Rules and Regulations, Subpart S*.

(iv) Direct current (DC) rotary, drawworks and catworks shall have an enclosed cooling system or be purged with air from a safe source.

**FIGURE 6-2**



**NOTE:** When deciding whether to use "explosion-proof" or "TEFC" motors in Zone I, consideration shall be given to the greatest hazard. An explosion-proof piece of equipment will protect against explosion, but does not protect against electrical shock in a damp atmosphere. "TEFC" motors do not protect against explosion, but eliminate potential electrical shock in a damp or wet atmosphere.



(c) Facilities and Equipment.

(i) An exhaust pipe from any ground level internal combustion engine, located within seventy-five (75) feet of any well bore, process vessel, oil storage tank or other source of ignitable vapor, shall be so constructed that any emission of flame along its length or at its end is prevented.

**(A) Emergency shut-down device (s) that will close off the combustion air shall be properly installed and identified on all diesel engines that are an integral part of the drilling rig or are operated as a stationary or mobile engine of a drilling rig within the radius of the rig anchors or within seventy five (75) feet of the well bore, whichever is greater.**

(ii) All CBMNG drilling rigs and auxiliary equipment (mobile and vehicular engines) shall be equipped with an over rev device (automatic air intake shutoff valve) installed on the motor, and approved spark arrestors attached to exhaust.

(iii) Stoves with open flame and any open flames for heating purposes shall not be permitted within seventy five (75) feet of the well bore, unless a written hot work permit is implemented.

(iv) Welding, cutting, brazing or the use of an open flame or a non-explosion proof heater within seventy-five (75) feet of the well bore shall require a written hot work permit. The hot work permit must adequately address the requirements listed in (A), (B), and (C) below and be maintained at the job site while applicable work is in process.

(A) Pre-Work Stage Communication Meeting

- (1) Simultaneous operations.
- (2) Air/gas testing with LEL monitor
- (3) Equipment isolation
- (4) Equipment preparation
- (5) Identification of hazards
- (6) Emergency procedures

(B) Work-In-Progress Stage:

- (1) Air/gas testing with LEL monitor
- (2) Personal protective equipment requirements
- (3) Fire watch
- (4) Special procedures/precautions

(C) Return to Service Stage:

- (1) Authorization and turnover signatures
- (2) Posting of permit

(v) Each CBMNG drilling location shall have a Lower Explosive Limit monitor located at the equipment operator's control panel at all times. This monitor will measure the LEL and alarm at 10% of the LEL. The monitor shall be calibrated to the manufacturer's specifications.

(vi) Generators, motors and lighting.

(A) Engine driven light plants shall be located at least seventy-five (75) feet from well bore unless properly protected to prevent source of ignition.

(B) Light plant generators shall have an adequate overload safety device.

(C) Vehicle lights shall not be used for lighting of rig operations in lieu of rig lights except in emergency.

(D) All light cords and plug-ins shall be kept in good condition.

(E) Rig lights shall be of an approved type for the area in which they are located. (See Section 8.(b).)

(F) Lamps and reflectors shall be cleaned frequently.

(G) The rays of the light shall be directed toward the objects to be illuminated, and away from the eyes of the workmen.