**Safe Work Requirement**

Electrical Safety Procedure

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| PURPOSE The purpose of this document is to define basic requirements to ensure safe operation of electrical equipment, safe work on electrical systems, and safe use of electric energy.  The requirements of this document can be used as an input to a safe work instruction at a local facility if being combined with the relevant international standards, local regulations and work practices. SCOPE This procedure is applicable to all ECDC activities, to the extent that it does not conflict with the applicable laws and regulations. RESPONSIBILITY    3. 1. **Rig Manager**   The Rig Manager has overall responsibility for the safety and health of personnel. This includes overall responsibility for ensuring a system is in place to provide the means of visually and audibly warning to the person working on the location.  The Rig Manager is responsible for implementing the approved electrical safety procedure at rig site where work is carried out under their control. Additionally, they shall ensure that any subcontractor working under their direction are fully trained in electrical safety procedures.  The Rig Manager is responsible and accountable for the application of this procedure in his area of responsibility.   * 1. **HSE Supervisor**   The HSE Supervisor shall assist the Rig Manager in ensuring all personnel working are trained in the use of electric equipment.  The HSE Supervisor shall periodically verify that ECDC employees and contractor personnel are trained for electrical safety procedure.   * 1. **Electrician**  1. Providing initial training to individuals on the use of the equipment and the actions to be taken in the event of an repaired. 2. Ensuring that defective equipment is immediately repaired 3. Understanding fully and applying correctly procedure in the course of their work at rig site. 4. Ensuring that safe working practices are being enforced at all times 5. Providing advice on the use of all types of protective clothing and equipment.  PROCEDURE AND GUIDELINES  1. 1. **Hazards**   Flash burns can be caused by opening switches, removing fuses, shorting cables, etc. and are often deep and slow to heal.  Electrical sparks and hot spots are common sources of ignition. Sparks can be caused by electrical faults such as short circuits or poor contacts. Hot spots can be caused by badly maintained equipment or overloading apparatus such as cables and connections.  One of the greatest risks with electrical equipment is the hazard of electric shock. This risk is not only confined to those who are repairing or maintaining electrical equipment but also, to a lesser extent, those who operate such equipment.  An appreciation of the principles of reducing the risk of electric shock is important. It is not reasonably practicable to completely remove the possibility of a person receiving an electric shock. However, appreciation and application of the principles of prevention of electric shock will enable an assessment of a system to be made by those authorizing, supervising and carrying out electrical maintenance.  There are two ways a person can receive an electric shock:   1. By directly touching a live conductor or line part (direct contact) 2. By touching metal work which has been made live by a fault in the electrical installation (indirect contact)   To comply with the Electricity at Work Regulations, protection has to be provided against both types of contacts.   * 1. **First Aid**   Personal injury or death may result from direct contact with defective, improperly connected or misused electrical apparatus or wiring. As little as 16 milli-amps can cause paralysis of the respiratory system, and 50 milli-amps have been known to cause death.  It is essential that qualified first aid treatment be given promptly to any victim of electric shock.  The first action must be to remove the victim from contact with the electrical supply, and the first aider must be particularly careful not to come into direct electrical contact with the victim or the conductor in the process.  An immediate check should then be conducted to confirm that the victim has not suffered respiratory paralysis and/or cardiac arrest. Emergency resuscitation must be given at once to prevent irreversible brain damage resulting from lack of oxygen.   * 1. **Protection**   Seven basic measures for protection against direct contact are:   1. Insulation 2. Barriers and enclosures 3. Obstacles 4. Out of Reach 5. Isolation 6. Personal protective equipment 7. Warning notices 8. **Insulation**   Insulation normally consists of the basic insulation of cables and parts required in every electrical installation. Insulation properties can only be lost due to destruction. Insulating materials must be capable of withstanding any electrical, mechanical, thermal and chemical stresses to which they may be subjected while in service.   1. **Barriers and Enclosures** 2. Where protection by barriers or enclosures is used to protect against direct contact then the degree of protection must be at least IP2X which is in the Index of Protection for the standard human finger which is estimated to be 88 millimeters long and 12 millimeters in diameter. 3. Where the opening in the equipment has to be longer than IP2X to enable maintenance to be carried out, precautions must be taken to ensure that there can be no unintentional touching of live parts and those persons are warned of proximity of live parts within the enclosure. 4. During the maintenance of an installation or the carrying out of new works, enclosures may have to be opened and barriers removed. The IEE Wiring Regulations (The Institution of Electrical Engineers Regulations for Electrical installations, Current Edition) give three alternative methods of safety against direct contact, which are detailed as follows: 5. The opening of the enclosure or the removal of a barrier is only possible by using a key or tool. This means that access is limited to Authorized Electrical Persons must know the dangers and take the necessary precautions. 6. The opening of the enclosure or the removal of a barrier is only to be carried out after the supply to live parts has been disconnected and the supply can only be restored after the barrier has been replaced or the equipment reclosed. Isolators interlocked with doors are an example of this type of protection. 7. An intermediate barrier having a degree of protection of IP2X is provided to prevent contact with live parts. Removal of the barrier is only possible by using a tool. 8. The removal of barriers must only be carried out under a Permit to Work which would include the requirement for isolations and other necessary safety precautions. 9. Since access can only be possible by using a tool in most cases, knurled nuts on covers shall not be used, unless backed up by a locking device. Therefore, care must be taken in selecting distribution boards to comply with the requirements for protection against direct contact. 10. Many boards have knurled screws for fixing the door which could allow anyone access to the interior. Access to the interior of distribution boards must be restricted to Authorized Electrical Persons. 11. Barriers must be replaced after work has been completed. This requirement is addressed in the Permit to Work System. 12. **Obstacles** 13. Obstacles are installed within enclosures to prevent skilled and instructed persons making unintentional contact with live parts. They are intended for use only where access is limited to skilled and instructed persons. They must be securely fixed but may be removed without using a key or tool. Therefore, they do not prevent intentional contact with live parts. Shrouds on fuses are an example of such protection. 14. Entry to such enclosures must be restricted to Authorized Electrical Persons. 15. **Out of Reach** 16. Regulation 7(b) of the Electricity at Work Regulations 1989 (as amended by SI 1997/No 1973) allows conductors to be suitably placed, which in general terms means out of reach. Placing out of reach does not stop intentional contact with live parts so the limit of arm's reach must be increased in areas where long or bulky metallic objects are handled. Where a barrier or obstacle limits a person's movement, such as a handrail, the limit of arm's reach in the horizontal plane starts at the obstacle unless the degree of protection is greater than IP2X. The limit in the vertical plane is 2.5 meters (8.2 feet) unless there is an intermediate barrier affording a degree of protection greater than 1P2X, i.e. IP3X or larger number. 17. Normally, such electrical equipment is isolated. A Permit to Work must be issued for de-isolation of such equipment. As such electrical equipment is most typically found offshore on workshop cranes, the Permit to Work must include restrictions on all other activities in the area which may lead to contact with the live conductors. Hazardous activities in the area of "out of reach" live conductors would include rigging, persons carrying lengths of pipe, use of portable ladders etc. 18. **Isolation Procedures** 19. Electrical isolation procedures must be followed under the Permit to Work System. This system ensures that the particular circuit can only be de-isolated when safe to do so. It also ensures in the case of a high voltage circuit isolated for electrical work that the circuit main earths cannot be removed. 20. Particular attention must be paid to the isolation of voltage transformers and of control and instrumentation circuits. 21. **Personal Protective Equipment (PPE)**   Where PPE is provided it must be in a condition suitable for the use for which it is required, it must be maintained in that condition and properly used. Such equipment includes, but is not limited to:   1. Rubber gloves 2. Rubber mats 3. Insulated tools 4. "Shepherd's crook" 5. **Warning Notices** 6. Warning notices shall be permanently displayed in equipment areas where there is electrical equipment and consequently there is a danger from electric shock. 7. The PTW system makes it compulsory to put tags at all points of isolation in order to warn persons operating other equipment in the same area. 8. However, additional warning notices are required in areas where live conductors are being worked on or electrical tests are taking place. 9. When electrical equipment is being decommissioned or dismantled, warning notices shall be located at the equipment itself, associated circuits, switches etc., in order to bring to people's attention the state of the equipment.    1. **Rubber Gloves**   Where insulating rubber gloves are used for electrical purposes, the following rules must be adhered to for storage and use:   1. Where rubber gloves are used for electrical purposes they shall be manufactured to BS 697:1968 Rubber gloves for electrical purposes. This specification indicates the distinction between requirements for gloves for use, where the potential ac does not exceed 650V between any two conductors or any conductor and earth, and for three other classes of gloves rated at l.lkV, 3.3kV and 4.0kV which are for use only in an emergency, i.e. to save life or averting a major accident. The following rules must be adhered to for the storage and use of insulating rubber gloves: 2. Rubber gloves shall be stored, maintained, inspected and used according to the manufacturer's instructions. 3. Rubber gloves shall be stored unfolded at a temperature between 10°C (50°F) and 21°C (70°F). 4. Rubber gloves shall be stored and issued such that they remain free from grease, oil, paint, thinners and strong acid. 5. When gloves are issued they must be examined inside and outside before use. 6. When gloves become soiled they shall be washed with soap and water at a temperature recommended by the manufacturer, dried and dusted with talc. 7. Gloves that become wet must be thoroughly dried. 8. Gloves that are in use shall be renewed at intervals not exceeding six months. 9. Gloves held in store shall be renewed at intervals not exceeding twelve months. 10. The maximum voltage for which a glove can be used is marked, normally by color coding, on the outside band of the glove sleeve. 11. White 650 Volts 12. Red 1,100 Volts 13. Green 3,300 Volts 14. Blue 4,000 Volts     1. **Rubber Mats** 15. When working on or in the presence of live conductors, suitable insulating mats shall be used as a precaution to prevent electric shock. 16. These mats shall be subject to periodic examination and replacement as necessary. 17. Insulated mats shall comply with BS 921:1987 Rubber mats for electrical purposes     1. **Insulated Tools** 18. Insulated tools shall be used when working on or in the presence of live conductors as a precaution to prevent electric shock. Because there is a probability of damage to tools when in use, the insulation shall be tough, thick and rated for a higher voltage than the equipment that is being worked on. 19. Spanners insulated with adhesive tape or screwdrivers with sleeving slipped over the shaft are not good enough. Insulated screwdrivers shall meet the requirements of BS 2559 Part 3:1973 Insulated screwdrivers.     1. **Handheld Insulated Tools - "Shepherd's Crook"** 20. When personnel are working on live equipment, an insulated device, normally referred to as the "shepherds crook", must be located in the work area to remove a person who has received an electric shock from the live equipment. 21. The crook shall be rated for use on the highest voltage equipment on the unit. 22. The crook shall only be used to remove personnel who have come into contact with live equipment or to pull live equipment, live wires, etc. from personnel.     1. **Earthed Equipotential Bonding** 23. Equipotential bonding is an electrical connection between exposed and extraneous parts which brings them to the same potential. 24. Safe earthing and bonding is dependent on good design, proper installation and adequate maintenance. 25. Every earthing conductor shall be of copper or other corrosion resistant material and must be securely installed and protected against damage and electrolytic corrosion. 26. Connections must be secured so that they cannot work loose under vibration. 27. Bonding may be necessary even when the metal frames or enclosures of apparatus are in direct contact with the steel structure or hull. 28. Conductivity tests shall be carried out on earth bonding to ensure that the resistance between contact faces is less than one ohm. 29. During maintenance, checks must be made on earth bonding to ensure that surfaces are free from rust, scale, paint, oil and grease. 30. Following installation or re-assembly during maintenance, connections must be protected with anti-oxidant grease or painted immediately.     1. **Temporary and Portable Electrical Equipment**   Electrical equipment which is not part of the regular equipment in use at the rig shall only be used with the approval of the Rig Manager after checking with the Electrician.  It is the responsibility of anyone using electrical equipment to make an external inspection of the equipment, plug(s) and cable(s) to ensure that it is serviceable and safe before switching on.  All temporary and portable electrical equipment must be suitable for the hazard classification of the area in which it is used. If not, a Permit to Work will be required.   * 1. **Control of Portable Electrical Power Tools**   ECDC requires control over the use of portable electrical power tools so that the equipment is regularly inspected and tested to ensure that it is safe for use, and that it complies with the host country regulations. Control is also required for equipment used in hazardous areas in compliance with the ECDC Permit to Work System.  This procedure covers all portable electrical power tools including hand lamps, extension leads and cross over leads.  This is the responsibility of the senior authorized electrical person (Site Electrician) and the Authorized electrical person (Assistant Electrician).   1. Each piece of equipment will have attached to the cable lead a PVC cable marker indicating its unique identifying number. 2. New electrical power tools will be inspected and tested prior to use. 3. An electrical power tool which on inspection is found unsuitable for further use will be taken out of service and disposed of in the appropriate manner. 4. An electrical power tool which is taken out of service temporarily (waiting for spare parts) will be clearly tagged and identified as being unfit for use. 5. Electrical power tools may be held by other departments on the site, e.g. mechanics, welders, etc., but will first be registered and tested by the electrical department. 6. All electrical power tools and non-explosion proof extension lights and leads must be fitted with a non-explosion proof plug.    1. **Operation and Maintenance of Electrical Equipment**   Work should be carried out only by suitable qualified and trained Electricians familiar with the equipment, JSA and PTW must be conducted when any live circuit and maintenance.   1. Tools and test equipment should be checked, in good working order and be used only for their intended purpose. 2. Appropriate protective equipment should be worn. Rubber gloves should not be used for normal work; their use is permitted only for emergency repairs when there may be a danger of contact with neighboring live lines or where it is absolutely necessary to work on low voltage live equipment. 3. Electrical work shall not be performed if there is an electrical storm in the immediate vicinity. 4. No work should be carried out on electrical equipment without ensuring that it has been disconnected. All electrical circuits shall be treated as live until the condition of the circuit is known - even low voltages should be treated as dangerous. 5. When working on electrical equipment, steps should be taken to ensure that it cannot be connected up or restarted unexpectedly by other persons, e.g. by locking the equipment, placing warning signs, removing fuses or similar means and using the Permit to Work system for all non-routine maintenance and repairs. 6. Circuits are to be proved to be dead by the use of circuit testers before work commences. 7. All doors and covers enclosing electrical equipment shall be kept closed except while being worked on. Equipment exposed for maintenance should never be left unattended. 8. Any guards and protective equipment removed in the course of maintenance work must be replaced and the equipment should not be restarted without first checking with the operator or responsible person. 9. No device shall be substituted for a fuse or circuit breaker. 10. Earth connectors and protective devices shall be carefully protected and not interfered with. 11. Hands, shoes and clothing must be kept dry, when any electrical equipment is handled.   Cable trays must not be used as anchors for lifting appliances, rest points for ladders or for other purposes for which they are not designed. They should be kept free of extraneous materials.   * 1. **Work on Live Electrical Equipment**   No work on live electrical equipment above 110 volts is allowed. On voltages below 100 volts where it is necessary to work on the equipment while it is live, the following rules should be applied:   1. Insulating stands, screens, barriers and mats should be used. 2. Warning signs should be used to restrict access to authorized personnel. 3. No person should work alone on live electrical equipment. 4. Insulating footwear, gloves and helmets should be worn. 5. The area of work and clothing, etc should be clean and dry. 6. Coverall sleeves should be kept rolled down. 7. Rings, metal watch straps and jeweler should not be worn and metal objects should be removed from pockets. 8. Only approved and insulated tools should be used.    1. **Temporary Electrical Supplies** 9. In classified areas a Permit to Work shall be obtained for every temporary supply. 10. Hand lamps, cables, extenders and adaptors, etc. shall be regularly checked in the electrical workshop and repaired if necessary. Only equipment which has been checked should be used to make temporary supplies. 11. Cable size and equipment ratings shall be suitable for the loads expected. 12. Temporary supplies shall be installed so that they can be readily de-energized at any time. 13. Equipment to be used outside shall be weatherproof. 14. Crossing and coiling of cables in the work area should be avoided. 15. Temporary cables should be routed so that they do not block passages, lay on the ground, create tripping hazards, or come into contact with equipment containing flammable liquids, gases, explosives, etc. 16. Extension cords should be properly connected, grounded and should be protected from traffic and objects with sharp edges. 17. Extension cords should never be allowed to become wrapped round any part of the body. 18. All temporary supplies should be de-energized before the site is deserted or the hot PTW expires.     1. **Batteries**   Batteries can produce hydrogen, which is highly flammable. Consequently precautions shall be taken to prevent any possible ignition of this gas, i.e.:   1. Areas containing batteries should be well ventilated. 2. Insulated tools should be used. 3. Before disconnecting live battery terminals, the circuit shall be bypassed to prevent sparking. 4. Terminals shall be screened with an insulating material to prevent them being short circuited.   In addition, when working with batteries, suitable protective clothing should be worn to avoid acid burns and an eye bath should be provided in the area.   * 1. **Intrinsically Safe Equipment**   When working on intrinsically safe equipment, in addition to the general safety rules relating to electrical equipment, attention should be given to the following:   1. Components should not be modified or removed from circuits. 2. If components have to be replaced, the replacement should be identical to the original. 3. Intrinsically safe transmission circuits shall be kept segregated from other circuits. 4. When using test equipment, care should be taken to ensure that the circuit is not crossed with another circuit. 5. Intrinsically safe equipment should always be labeled to show for which groups of gases the certificate is valid. 6. If the equipment is located in a gas proof container care should be taken to ensure the seals are undamaged and properly replaced on completion of the work.    1. **General Electrical Equipment** 7. **Electrical Code**   Dependent upon the location of manufacture, Classification body, design specification, or applicable legislation, there are two methods of classification of hazardous locations. The following American Petroleum Institution recommendations are based on the National Electrical Codes.  CLASSIFICATION OF HAZARDOUS LOCATIONS - (American Petroleum Institution-RP 500B or 46 CFR sub chapter J.)   1. **Hazardous Area Class I Division I.** 2. An area in which hazardous concentrations of flammable gases or vapors exist continuously, intermittently or periodically under normal operating conditions; or 3. An area in which hazardous concentrations of such gases or vapors may exist frequently because of repair or maintenance operations or because of leakage; or 4. An area in which breakdown or faulty operation of equipment or processes might release hazardous concentrations of flammable gases or vapors, and might also cause simultaneous failure of electric equipment. 5. **Hazardous Area Class I Division II.** 6. An area in which volatile flammable liquids or flammable gases are handled, processed, or used, but in which the hazardous liquids, vapors, or gases will normally be confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown of such containers or systems, or in case of abnormal operation of equipment; or 7. An area in which hazardous concentrations of gases or vapors are normally prevented by positive mechanical ventilation, and which might become hazardous through failure or abnormal operation of the ventilating equipment; or 8. An area that is adjacent to a Class I Division I location, and to which hazardous concentrations of gases or vapors might occasionally be communicated unless such communication is prevented by adequate positive-pressure ventilation from a source of clean air and effective safeguards against ventilation failure are provided.   Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities and Classified as Class 1, Zone 0, Zone 1 and Zone 2. (American Petroleum Institution-RP 505)  Class 1 locations are those in which flammable gases or vapors are, or may be, present in the air in quantities sufficient to produce explosive or ignitable mixtures. Class I locations include the following:   1. **Class I, Zone 0**   A Class I, Zone 0 location is a location   1. in which ignitable concentrations of flammable gases or vapors are present continuously; or 2. In which ignitable concentrations of flammable gases or vapors are present for long periods of time.   This classification usually includes locations inside vented tanks or vessels containing volatile flammable liquids; between the inner and outer roof sections of a floating roof tank containing volatile flammable liquids; inside open vessels, tanks and pits containing volatile flammable liquids; the interior of an exhaust duct that is used to vent ignitable concentrations of gases or vapors; and inside inadequately ventilated enclosures containing normally venting instruments utilizing or analyzing flammable fluids and venting to the inside of me enclosures.   1. **Class 1, Zone 1**   A Class 1, Zone 1 location is a location   1. in which ignitable concentrations of flammable gases or vapors are likely to exist under normal operating conditions; or 2. in which ignitable concentrations of flammable gases or vapors may exist frequently because of repair, or maintenance operations or because of leakage; or 3. in which equipment is operated or processes are carried on, of such a nature that equipment breakdown or faulty operations could result in the release of ignitable concentrations of flammable gases or vapors and also cause simultaneous failure of electrical equipment in a mode to cause the electrical equipment to become a source of ignition; or 4. that is adjacent to a Class I, Zone 0 location from which ignitable concentrations of vapors could be communicated unless communication is prevented by adequate positive pressure ventilation from a source of clean air and effective safeguards against ventilation failure are provided.   Note: Normal operations are considered the situation when plant equipment is operating within its design parameters, Minor releases of flammable material may be part of normal operations. Minor releases include the releases from mechanical packings on pumps. Failures mat involve repair or shutdown (such as the breakdown of pump seals and flange gaskets, and spillage caused by accidents) are not considered normal operation.  This classification usually includes locations where volatile flammable liquids or liquefied flammable gases are transferred from one container to another; inadequately ventilated pump rooms for flammable gas or for volatile flammable liquids; the interiors of refrigerators and freezers in which volatile flammable materials are stored in the open, lightly stoppered, or easily ruptured containers; and other locations where ignitable concentrations of flammable vapors or gases are likely to occur in the course of normal operation, but not classified Zone 0.   1. **Class I, Zone 2**   A Class I, Zone 2 location is a location:   1. in which ignitable concentrations of flammable gases or vapors are not likely to occur in normal operation and if they do occur will exist only for a short period; or 2. In which volatile flammable liquids, flammable gases, or flammable vapors are handled, processed, or used, but in which the liquids, gases, or vapors normally are confined within closed containers of closed systems from which they can escape, only as a result of accidental rupture or breakdown of the containers or system, or as the result of the abnormal operation of the equipment with which the liquids or gases are handled, processed, or used; or 3. in which ignitable concentrations of flammable gases or vapors normally are prevented by positive mechanical ventilation, but which may become hazardous as a result of failure or abnormal operation of the ventilation equipment; or 4. that is adjacent to a Class I, Zone 1 location, from which ignitable concentrations of flammable gases or vapors could be communicated, unless such communication is prevented by adequate positive-pressure ventilation from a source of clean air, and effective safeguards against ventilation failure are provided.   The Zone 2 classification usually includes locations where volatile flammable liquids or flammable gases or vapors are used, but that would become hazardous only in case of an accident or of some unusual operating condition.  **Classification of Hazardous Areas on Drilling Sites**  The potential hazard of explosion and fire due to improper electrical installations or use of unapproved electrical equipment in hazard areas as described makes it imperative that only qualified personnel, authorized by the company perform electrical work. (American Petroleum Institution RP 500B, Section 4 or American Petroleum Institution RP505).   1. **General Rules** 2. Only qualified and authorized Electricians may perform electrical work or repairs. All electricians and mechanics are required by law to be familiar with the Company's written electrical and mechanical procedures and permits. 3. Electrical equipment should be disconnected and locked out from its source before work is performed. 4. Remove from service and report all defective or unsafe electrical equipment to your supervisor. 5. A fuse puller should be kept on hand and used for replacing fuses. 6. All electrical hand tools and extension cords should be fitted with proper ground plugs. 7. Never use water hoses to clean around generators and electrical switchboards. 8. Always turn off electrical current before changing light bulbs. 9. Wherever possible, electrical cables and/or extension cords should be run overhead and not laid on the ground. 10. Broken or defective cords should be cut to shorter lengths or discarded. 11. Derrick lights attached by hangers should be equipped with safety cables fastened to girts. Any light fixture mounted above 2 meters (6 ft.) shall have a safety cable. 12. Adjustments or repair work should not be attempted on electrical panels until related rig components can be shut down and the panel locked out. 13. Power hand tools should not be equipped with a locking device on the trigger, switch or throttle. 14. Never assume an electrical cord is harmless. Always check its source or connection to ensure the power is off before attempting repairs. 15. Live electrical rig equipment and components should not be worked on without proper non-conductive tools. 16. Switches shall never be thrown "in" or "out" while under a loaded circuit. All lighting fixtures shall be kept in good repair. Broken or burned out bulbs shall be replaced as soon as possible, and vapor proof globes and guards shall be kept in place over lights. 17. Explosion proof equipment that has been repaired should be returned to an explosive proof condition. 18. Non-conductive mats should be placed in front of all switchboards and maintained in a clean condition. 19. Periodic checks for proper circuit grounds on all electric outlets should be performed. 20. All high voltage panels (above 400 volts) should be clearly marked "DANGER - HIGH VOLTAGE". 21. Electrical hand tools should not be used while standing in water or outside during foul weather conditions. 22. Personnel rescuing a victim of electrical shock should first switch off the power causing the shock. If this is not possible, attempt to pull the victim away from contact with the live conductor using a dry stick, a dry rope, or another non-conducting material.     1. **Work in Proximity to Exposed Energized Power Sources**   The purpose of this section is to establish a procedure for working in the proximity of exposed energized power sources. This procedure applies to all field operations including masts, derricks or guylines.  The procedure is as follows:   1. Neither equipment nor machines on rigs (includes guylines) should be operated closer to power lines than the recommended minimum clearances shown in table 1, except when such lines have been de-energized and visibly grounded or when barriers are present to prevent physical contact with the lines. 2. A responsible individual should be designated to observe equipment clearance as defined in table 1. if recommended clearance is not maintained, observer should sound a warning when it is difficult for the operator to determine the clearance. 3. Use of cage-type boom guards, insulating guylines, insulating links, or proximity warning devices on rigs or guylines does not alter the recommendations of table 1. 4. Overhead wires should be considered energized (live) unless visibly grounded and either the electrical system owner reports them to be non-energized or knowledgeable electrical authorities test and find them to be non-energized.   **Table 1**  **Recommended Minimum Clearances Between Power Lines and Masts, Derricks, or Guylines**   |  |  |  | | --- | --- | --- | | **Rig Status** | **Line Voltage, Volts** | **Minimum Clearance, etc.** | | Operating Rigs | All | 10 feet (3.3 meters) plus height of mast or derrick and extensions e.g., Antennas | | In Transit  (mast lowered) | Up to 5 KV | 6 feet (2.0 meters) | | 5 KV to 50 KV | 10 feet (3.3 meters) | | 50 KV to 250 KV | 15 feet (4.5 meters) | | Over 250 KV | 20 feet (6.0 meters) |  Record  * 1. BSA-ECDC-HS-CL-S010-01-Earth Cable Weekly Check v1.0   2. BSA-ECDC-HS-CL-S010-02-Circuit Breaker Check v1.0   3. BSA-ECDC-HS-CL-S010-03-Electrical Plug Check v1.0   4. BSA-ECDC-HS-CL-S010-04-Airconditioner Check v1.0 |