
Gulfof**Mexico**



GoM Region

**GoM Region Electrical Safety Safe Work
Practice (SWP)**

AMENDMENT RECORD

Amendment Date	Revision Number	Amender Initials	Amendment
02/20/2015	6	PT	Updated document and added requirements based on Action Items related to incident involving an electrical extension cord fire.
09/12/2013	5	PT	4.3 Restated opening paragraph of this section to clarify the use of an appropriate level risk assessment and approval as defined by the "GoM Task Risk Assessment Table"
06/12/2012	4	PT	Reformatted document to meet new GoM document control template standardization guidelines.
04/09/2012	3	PT	<p>4.2 Testing shall include verification of test instrument by first checking with known test source to confirm proper test instrument operation before and after testing equipment is isolated.</p> <p>4.3 Exposed energized electrical equipment (conductors or circuit parts) shall be put into an electrically safe work condition before anyone works on or near the equipment. Energized or potentially energized parts shall be de-energized, locked, tagged and tested before personnel begin work on or near the parts. Only following a level-1 risk assessment and approval of Management (Offshore Installation Manager or other approved Facilities Operations Manager) shall equipment be worked on while exposed live parts are present.</p> <p>4.6.2 Clarification of GFCI requirements and the removal of wording regarding assured grounding scheme.</p> <p>Addition of statements that address resetting of circuit breakers after an electrical trip occurs;</p> <p>4.8 Addition of statements regarding use of personal electrical devices on offshore facilities</p>

TABLE OF CONTENTS

1	Purpose / Scope	4
2	Key Responsibilities	4
3	Overview	4
4	Procedures	4
4.1	Testing Equipment.....	4
4.2	Verification of Electrical Isolation When Performing Lockout/Tagout.....	4
4.3	De-Energizing Live Parts	5
4.4	Disconnecting Means for Electrical Isolation.....	6
4.5	Labeling of Electrical Systems	6
4.6	Electrical Equipment and System Grounding.....	6
4.6.1	Temporary and Portable Wiring Installations.....	7
4.6.2	Equipment Inspection, Testing, and Ground Fault Circuit Interrupter (GFCI) Usage	7
4.6.3	Inspection and Use of Extension Cords	8
4.7	Portable Electrical Equipment.....	8
4.8	General Safety Measures	9
4.8.1	Resetting or Changing Circuit Protection Devices.....	10
4.9	Personnel Protective Equipment.....	10
4.9.1	Requirements for Care and Use of Rubber Insulating Equipment...	11
4.9.2	Rubber Insulating Equipment Test Intervals.....	11
4.9.3	Restrictions on Personal Equipment	12
4.10	Overhead Lines	12
4.11	Hazardous Areas.....	13
5	Definitions	14
6	Key Documents / Tools / References	14
6.1	American Petroleum Institute (API).....	14
6.2	American Society of Testing and Materials (ASTM) / American National Standards Institute (ANSI).....	15
6.3	Institute of Electrical and Electronic Engineers (IEEE)	15
6.4	National Fire Protection Association (NFPA)	15
6.5	Occupational Safety and Health Standards, 29 CFR 1910 Subpart S - Electrical.....	15

1 Purpose / Scope

The purpose of this Safe Work Practice (SWP) is to provide Electrical Safety requirements.

2 Key Responsibilities

Operation Supervisors are responsible for Implementing and enforcing requirements of this Electrical Safety SWP

3 Overview

The Electrical Safety requirement applies to all operations involving work on or near an energized installation. Only qualified personnel shall operate, maintain, inspect and test electrical equipment and systems.

4 Procedures

The content of these procedures is an overview of the safety requirements for working on or near electrical equipment and systems.

See requirements for energy isolations in the GoM Control of Work Safe Work Practice (SWP). This SWP and NFPA 70E, provide additional, detailed requirements for electrical energy isolations.

4.1 Testing Equipment

Test equipment shall be calibrated, tested, and used in accordance with manufacturer's instructions. Test equipment shall also be inspected and tested before and after each use to check for proper operation. In addition, all test equipment shall be inspected, tested, and calibrated annually. A non-contact voltage proximity meter that is rated for the voltage being tested is recommended when performing tests to confirm the energy state of equipment such as panel boards, switchgear, and motor control centers.

4.2 Verification of Electrical Isolation When Performing Lockout/Tagout

After all sources are isolated, tagged, and locked out, qualified personnel shall use test equipment to confirm exposed, normally energized parts of electrical equipment are de-energized. During this test, qualified personnel shall wear PPE rated to protect the individual against the arc-flash and shock hazards present as if the equipment was energized. The test shall be used to determine that all sources are isolated, equipment de-energized, and if any residual, back-fed, or induced voltage is present. Testing shall include verification of test instrument by first checking with known test source to confirm proper test instrument operation before and after testing equipment is isolated.

4.3 De-Energizing Live Parts

Exposed energized electrical equipment (conductors or circuit parts) shall be put into an electrically safe work condition before anyone works on or near the equipment. Energized or potentially energized parts shall be de-energized, locked, tagged and tested before personnel begin work on or near the parts. Only following an appropriate level risk assessment and approval as defined by the "GoM Task Risk Assessment Table" shall equipment be worked on while exposed live parts are present.

Examples of possible situations where Management might approve such work include:

- De-energizing would introduce additional or increased hazards (such as deactivation of emergency alarm systems, shutdown of hazardous location ventilation equipment, or removal of critical illumination from an area).
- It is not feasible due to equipment design or operational limitations (i.e., testing of electrical circuits that can only be performed when energized or working on circuits that form an integral part of a continuous industrial process that otherwise requires a complete shutdown in order to permit work on one circuit or piece of equipment).

If the exposed live parts are not de-energized, the following practices shall be used to protect exposed personnel:

- A detailed procedure and electrical ICC shall be prepared that includes and documents all check list items covered in Annex J of NFPA 70E and outlines the specific risks and mitigation that will be used to reduce the risk to an acceptable level.
- Only qualified persons may perform the work.
- Proper electrical PPE shall be worn.
- When exposed energized electrical components are involved, guarding, isolating, or insulating materials shall be used to protect the individual from direct body contact or indirect body contact via tools, equipment, and other conductive materials.
- Provide illumination.
- When confined spaces such as manholes or vaults are involved, protective shields, barriers, or insulating materials shall be used to avoid inadvertent contact with energized parts.
- Secure doors, hinged panels, etc., to prevent their swinging into personnel.
- Handle conducting materials in contact with the employee appropriately to prevent them from contacting energized parts.
- Only use portable ladders with non-conducting side rails (fiberglass).
- Do not wear conductive clothing or jewelry (i.e., watch bands, bracelets, rings, key chains, necklaces, metallic aprons, or metal headgear).
- Do not use conductive cleaning materials (i.e., steel wool, metallic cloth, silicon carbide, or any conductive liquid solutions) in proximity to energized parts unless procedures are followed to prevent contact with energized parts.

4.4 Disconnecting Means for Electrical Isolation

Only load-rated switches, circuit breakers, or other devices specifically designed for disconnecting electrical power circuits may be used for opening, reversing, or closing circuits under load conditions.

Only primary disconnect switching devices that physically disconnect the power supply circuit conductors from equipment being maintained shall be used to isolate all electrical energy for lock-out-tag-out purposes. Lock-out of control switches that isolate control power to automatic switching components of the electrical equipment shall not be used as the sole method of electrical isolation.

The following procedures shall be followed when working on electrical control panels:

- Proper PPE designed to provide shock hazard and thermal protection from arcing shall be worn.
- Before contacting any components in an electrical control panel, confirm de-energization with an appropriately rated voltmeter or other device approved for the service.
- Before operating switches or breakers, confirm all protective panels are closed and fastened.
- To disconnect the electrical power from equipment such as motor starters, always turn the control switch to the off position before turning the main disconnect switch to the off position.
- To re-energize electrical equipment such as motor starters, always confirm control switches are off before turning on the main disconnect switch.
- When operating the control or main switch, NEVER stand in front of the electrical panel. Always stand off to the side of the panel to operate the switch. Never look at the control panel. Should the panel explode, your eyes and body shall not be in a direct line with the explosion.

4.5 Labeling of Electrical Systems

- All components of electrical systems shall be legibly marked indicating voltage, source of power, and what the component feeds. The electrical distribution system (service, feeder, and branch circuits) shall also be legibly marked and cross referenced between components to indicate their purposes. The markings shall be sufficiently durable to withstand the service environment.
- The covers on pull and junction boxes of 600 volts or above shall be permanently marked "DANGER, High Voltage".
- Where doors are used for access to live electrical equipment rated 600 volts (AC or DC) or above, either door locks or interlocks shall be provided and latches shall require a tool to open the door.
- Switches, controllers, and circuit breakers used for isolation purposes shall be limited to those that can be mechanically locked out in the off position.
- Equipment warning labels indicating arc flash incident energy, shock hazard voltage magnitude and PPE ratings shall be followed at all times when exposed energized or potentially energized parts of equipment is present.

4.6 Electrical Equipment and System Grounding

Confirm that the electrical equipment manufacturer's grounding recommendations are followed when installing or using any electrical equipment or devices.

Equipment safety grounding conductors provided in temporary wiring should be the first to be connected and the last to be disconnected for any temporary wiring.

As defined in the National Electrical Code (NFPA 70), API-RP-14F (14FZ), and applicable OCS orders, the power system grounding and equipment safety grounding for the permanent electrical equipment on the facility shall be maintained to ensure the integrity of the grounding system. Periodic inspection and testing shall be performed to ensure the integrity of the system. In general, the inspection and testing of the equipment grounding shall be performed when the equipment overall inspection and tests are performed.

4.6.1 Temporary and Portable Wiring Installations

The following requirements apply to temporary and portable wiring installation that are used during maintenance, remodeling, construction activities or repair of buildings, structures, or equipment. All circuits used in temporary and portable wiring installations shall be protected by using either ground fault circuit interrupters (GFCI) or an assured grounding conductor program as detailed in this section. This is a requirement of OSHA 1910.304(b)(3)(ii).

4.6.2 Equipment Inspection, Testing, and Ground Fault Circuit Interrupter (GFCI) Usage

These requirements apply to all employees and contractors who use portable electric tools, lights, extension cords, or other portable electrical equipment. It is intended to specify the use of ground fault circuit interrupters (GFCI) instead of an assured grounding conductor program in accordance with the Occupational Safety and Health Administration (OSHA) standard 29 CFR 1926.404 on electrical wiring design and protection.

- GFCI's are required for all 120 VAC 3-wire supplies for maintenance and construction activities.
- The GFCI device shall be located at the source of supply to the extension cord and shall be plugged into a permanently mounted 3-wire grounded receptacle. It shall not be plugged into unprotected extension cords.
- User shall function check GFCI using test buttons to verify protection integrity before use. GFCI's with damaged receptacle cords or that fail a function test shall be taken out of service.
- Portable electrical equipment plugged into conventional wall outlets, inside buildings, shops or warehouse, protected by centrally located permanent GFCI's do not require an additional GFCI plugged in at the receptacle. However, these GFCI's shall never be temporarily wired in at circuit breaker panel boards. Conventional wall outlets (i.e. building receptacles) protected by a centrally located permanent GFCI shall be designated by a labeled receptacle cover.
- Double insulated tools are not required to be grounded or tested.
- Equipment found to be defective shall be tagged out of service and not used until repaired or replaced by a qualified person.

CAUTION: When electrical equipment is used in potentially wet areas and connected to a circuit that does not have a GFCI incorporated, it shall be protected by a portable GFCI.

4.6.3 Inspection and Use of Extension Cords

- Extension cords used in hazardous (classified) locations shall be approved by Nationally Recognized Testing Laboratory for a Class 1, Division (Zone) 1, Group D (IIA) area. (See API RP 14F or 14 FZ, Section 12.3).
- Extension cord sets shall not be plugged into one another (UL 817).
- Short, general purpose extension cord sets may be used in unclassified areas or within the area covered by an active / issued GoM Hot Work Permit.
- All extension cords used outdoors shall be “outdoor-use” type, designed for hard or extra-hard usage [i.e., insulation classification: S00W (“W” indicates weather resistant), or equivalent]. All extension cords shall be three-wire type. (UL 817).
- All extension cords shall be visually inspected by the user before and after use for physical damage (loose parts, deformed or missing pins, damage to the outer cover or insulation, or pinched/crushed outer jacket). All defective or damaged cords and equipment shall be removed from service and tagged out immediately. They shall not be used until repaired and tested.
- Extension cords used in an outdoor environment shall be disconnected from the power source when not in use, such as when left unattended during breaks or at the completion of the work shift, then returned to storage upon the completion of the job.
- All Extension cord minimum bend radius shall not be exceeded. Cords shall not be tightly looped or knotted. Locking style cord plugs or other methods to prevent general purpose cord ends from becoming inadvertently disconnected shall be used.
- Other than use of single, small power, extension cord connected portable tools; facility electrical technicians should review and advise on the use, connection to facility electrical system, capacity rating, and overcurrent protection of extension cord connected portable power equipment. If additional questions remain, contact GoM electrical support engineers.

4.7 Portable Electrical Equipment

Follow the guidelines below for portable electrical equipment:

- Portable equipment shall be properly handled to avoid damage to the equipment. Electrical cords shall not:
 - Be used for raising or lowering equipment.
 - Be fastened by staples.
 - Be hung in a manner which could cause damage to the outer insulation.
- Equipment cords shall follow the inspection requirements stated in Section 4.6.3 for extension cords.

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- Flexible cord connected portable lights used outdoors shall be approved for a Class 1, Division (Zone) 1, Group D (IIA) hazardous (classified) area by a Nationally Recognized Testing Laboratory.

Grounding type cords shall be used with grounding type equipment. Receptacles and plugs may not be altered such that proper continuity cannot be achieved. Adapters cannot be used that defeat the grounding connection of equipment.

- In areas with potential exposure to conductive liquids, only equipment and cords approved for use in wet locations shall be used.
- Hands shall be dry when plugging or unplugging energized equipment. If energized plugs or receptacles are wet or could otherwise provide a conducting path, only insulating protective equipment shall be used for handling the connection devices.
- Locking type connectors shall be properly locked after connection.

4.8 General Safety Measures

WARNING: Do NOT work on anything you are not trained and qualified to work on.

- One person shall not work alone on energized or potentially energized electrical equipment with exposed parts that have not been placed in an electrically safe work condition. In general, electrical work performed on energized or potentially energized work shall be performed with two qualified electrical personnel. Work tasks that are risk assessed as a Hazard/Risk Category 0 or 1 per NFPA 70E may be performed with one qualified electrical person and an unqualified person observing the work as long as all the restriction of the unqualified worker is observed as outlined in NFPA 70E and the person is properly trained in appropriate emergency response.
- Hands, shoes, and clothing shall be dry when any energized electrical equipment is handled.
- Personal electrical equipment such as hair dryers, electric shavers, clocks, radios, televisions, battery chargers and computers are allowed in unclassified buildings such as living quarters, offices, and shops as long as they are 3rd party approved by a Nationally Recognized Testing Laboratory (UL, FM, CSA, etc.) and the equipment is not connected where the total load capacity exceeds 80% of the supply circuit rating. Qualified electrical personnel shall review and advise the OIM of all questionable installations. Power strips shall be loaded no greater than 80% of their rating. Ganging of power strips shall be avoided. Personal electric heaters, AC units, portable corded lights, microwaves and heating devices other than hair dryers are not allowed with-out prior approval by the OIM.
- Jewelry shall be removed prior to working on or near energized or potentially energized electrical equipment with exposed parts.
- All protective equipment shall be inspected before each job.
- Personnel shall not touch the metal frame of a case if it is ungrounded while they are in contact with the ground or a grounded object. All electrical equipment support frames shall be electrically bonded to surrounding facility structure. This local bonding shall be in addition to the electrical safety grounding conductor that is routed with the power supply wiring.
- Tag, mark, and post suitable signs to warn other workers of possible dangers involved in the work.
- Barricades and barriers shall be used in accordance with the SWP titled Barricades and Barriers.

4.8.1 Resetting or Changing Circuit Protection Devices

Manually reclosing a circuit breaker, or re-energizing a circuit by replacing a fuse, is generally prohibited. Qualified personnel shall first determine the cause of the electric protective device trip (e.g., ground fault trip, instrument trip, phase imbalance, etc.). The following details specific requirements.

- Reclosing circuit breakers greater than 250 VAC or DC is prohibited until the cause of the trip has been determined, and corrections or repairs have been completed by someone trained to troubleshoot an electrical device trip.

Exceptions:

- Resetting thermal overloads is permitted.
- Circuit breakers 480 volt and above feeding motors can be reclosed if the breaker trip was caused by a process related trip (e.g., lube oil, low flow, hi-discharge pressure, etc.).
- Individual low voltage (i.e., 120/208 volt and below) circuit breakers can be reset one time. Lighting panel main breakers or fuses cannot be reset or replaced without the circuit first being checked by a qualified person.
- Fuse replacement above 50 volts shall be performed by qualified personnel.
- By-passing electrical protective devices to allow resetting of breakers or using a fuse or circuit breaker with a rating too high to protect the circuit or equipment, is prohibited. The only exception is for I&E personnel performing diagnostic evaluations or troubleshooting.

NOTE: Changing the settings of protective devices (relays, circuit breakers, etc.) shall be performed in accordance with the BP Gulf of Mexico change management process for changes to control & safety systems. Contract BP Gulf of Mexico instrument, control, and electrical engineering for details for the change management process.

4.9 Personnel Protective Equipment

As required in NFPA 70E, thermal protection from electrical arc flash shall be used when qualified persons are working on or near energized or potentially energized equipment with exposed parts of 50 volts (AC or DC) or greater.

At a minimum, the thermal protection shall be rated for the maximum arc flash exposure determined based on NFPA 70E arc flash hazard assessment for the equipment where service is being performed. The assessment shall either utilize the degree of hazard tables as provided in NFPA 70E or determined by calculations in accordance with industry standard methodology such as IEEE 1584. The protective clothing and other personal protective equipment shall conform to the latest NFPA and ASTM F1506 standard.

Only rubber insulating protective equipment such as insulating blankets, matting, covers, line hoses, gloves, and sleeves that are manufactured and tested per the specifications in the applicable American Society for Testing and Materials (ASTM) standard shall be used.

Refer to OSHA standard 29 CFR 1910.137 for additional guidance.

4.9.1 Requirements for Care and Use of Rubber Insulating Equipment

Electrical protective equipment shall be maintained in a safe, reliable condition through proper usage, inspections, cleaning, storage, and testing. Insulating equipment shall be inspected for damage prior to use and after any incident that may have caused damage.

The insulating equipment shall not be used on voltages higher than what it was designed for.

Rubber insulating gloves shall also be given an air test along with the inspection. A visual inspection alone will not reveal "pin-hole" defects in gloves. Even a "pin hole" will allow current to pass through the glove and cause electrical injury. The cuff of the rubber glove shall be rolled to create an airtight seal during inflation of the glove. If the glove deflates or will not hold air, it shall be destroyed.

Leather gloves properly matched with rubber insulating gloves shall be worn to:

- Provide abrasion resistance
- Puncture resistance
- Prevent arcing to skin

Insulating equipment with any defect that would degrade the insulating properties shall not be used and shall be destroyed.

The insulating equipment shall be kept properly cleaned of foreign substances. The insulating equipment shall be stored to protect it from light, temperature extremes, excessive humidity, ozone, and other damaging conditions.

Electrical protective equipment shall be electrically tested per the intervals described below in accordance with the requirements of the applicable ASTM standard. Insulating equipment failing to pass inspections or electrical tests shall not be used and shall be destroyed, unless repaired in accordance with manufacturer specifications. Repaired equipment shall be electrically re-tested before use.

Refer to OSHA standard 29 CFR 1910.137 for applicable ASTM standards.

4.9.2 Rubber Insulating Equipment Test Intervals

Table 1: Test Interval Table

Rubber Insulating Equipment	Test Interval
Rubber insulating line hose	Test upon indication that insulating value is suspect
Rubber insulating covers	Test upon indication that insulating value is suspect
Rubber insulating blankets	Test before first issue and every 12 months thereafter

Rubber Insulating Equipment	Test Interval
Rubber insulating gloves	Test before first issue and every 6 months thereafter
Rubber insulating sleeves	Test before first issue and every 12 months thereafter

CAUTION: If the insulating equipment has been electrically tested but not issued for service, it shall not be placed into service unless it has been electrically tested within the previous 6 months for rubber insulating gloves and 12 months for rubber insulating sleeves.

Certification that the equipment is tested per requirements shall be maintained. To provide the required certification of the electrical tests, invoices or the equivalent, identifying the equipment and the test date or purchase date, shall be maintained.

4.9.3 Restrictions on Personal Equipment

Only non-conductive hard hats (ISEA Z89.1, Class E) are allowed for use where there is a potential for injury from electric shock or burns due to contact with energized parts.

Only insulated tools or handling equipment shall be used when working near energized equipment if the tools or equipment might come in contact with the parts. The insulating materials of the tools shall be protected against damage and rated for the voltage that may be encountered.

- Fuse handling equipment, insulated for the circuit voltage, shall be used to remove or install fuses when the terminals are energized.
- Ropes and hand lines used near exposed energized parts shall be non-conductive and kept clean
- Protective shields, barriers, or insulating materials shall be used to protect each employee from shock, burns, or other electrical injuries while the employee is working near the energized parts that may be accidentally contacted. This includes guarding the exposed energized parts from access by unauthorized personnel.

4.10 Overhead Lines

When an unqualified person is working in the vicinity of an overhead line, the person, and any object the person is in contact with which could contact the overhead line, shall not come closer to the overhead line than:

- For voltages to ground 50kv or below - 10 feet.
- For voltages to ground over 50kv - 10 feet plus 4 inches for every 10kv over 50kv.

CAUTION: For voltages encountered with overhead power lines, objects that do not have an insulating rating for the voltage involved are considered conductive.

Guidance for qualified persons can be found in 29 CFR 1910.333(c)(3).

Any vehicle or mechanical equipment capable of having structure parts elevated near energized overhead lines of 50kv or less shall be operated so that a clearance of 10 feet is maintained. If the voltage is greater than 50kv, the clearance shall be increased 4 inches for every 10kv.

Conditions that may reduce these clearance requirements can be found in 29 CFR 1910.333 (c)(3).

4.11 Hazardous Areas

In hazardous (classified) areas, only equipment specifically approved by a United States Coast Guard approved third part testing agency shall be used. The equipment shall be approved for its intended service and classified area as designated by the hazardous area plan drawings for the facility. The facility areas are classified in accordance with article 500 or 505 of the National Electrical Code and API-RP-14F (or 14FZ for zone locations). The facility hazardous area plans are developed to show the extent of the hazardous areas and are in accordance with API RP 500 or 505. In general, equipment that is not certified or approved for use in a hazard shall not be used in those areas. Only when approved by the facility Operations Installation Manager (OIM) and in accordance with the facility hot work permit system shall non-approved electrical equipment be used in a hazardous area.

Electrical equipment in hazardous areas shall be de-energized prior to the performance of inspection and maintenance activities such as opening explosion-proof enclosures. Maintenance and inspection activities on energized electrical equipment in hazardous areas must be approved by the OIM and in accordance with the facility hot work permit system prior to performing the work.

NOTE: Hazardous areas most likely encountered in exploration and production (E&P) locations will be designated according to the following classes:

- Class I, Zone (Division) 1 is designated as:
 - A location where ignitable concentrations of flammable gases or vapors exist under normal operating conditions.
 - Where ignitable concentrations of gases may exist frequently due to repairs, maintenance, or leakage.
 - Where breakdowns or malfunctioning equipment or processes might release ignitable concentrations of flammable gases or vapors, and might also cause simultaneous failure of electrical equipment.
- Class I, Zone (Division) 2 is designated as:
 - A location where volatile flammable liquids or vapors are handled, processed or used and are normally confined within closed containers or systems.
 - Where ignitable concentrations of gases or vapors are normally prevented by positive mechanical ventilation and which may become hazardous if this ventilation failed.
Where the location is adjacent to a Class 1, Zone (Division) 1 area which might communicate ignitable concentrations of flammable gases or vapors, unless prevented by adequate positive pressure ventilation from a source of clean air and effective safeguards against ventilation failure are provided.

Equipment installed in hazardous (classified) areas shall be legibly marked by the manufacturer or the testing agency indicating in what areas it is approved for use.

5 Definitions

Term	Definition
Electrical Control Panels	For discussion of shock and arc flash hazards associated with working on or near energized or potentially energized equipment, Electrical Control Panels include enclosures, boxes, and panels that contains electrical components that have exposed parts that operate at 50 volts (AC or DC) or higher. For discussion of potential ignition sources in hazardous (classified) areas, Electrical Control Panels include enclosures, boxes, and panels that contain electrical components that have exposed parts that operate at any voltage.
Explosion Proof	An apparatus enclosed in a case that is capable of withstanding an explosion of a gas or vapor that may occur within it and preventing the ignition of a gas or vapor surrounding the enclosure.
Grounding	A safe pathway for electricity to follow to the ground in the event of electrical leakage in circuits and/or equipment.
Intrinsically Safe Equipment	Equipment in which any spark or thermal effect is incapable of causing an ignition of a flammable or combustible material in air.
Qualified Person	One who has received training in and has demonstrated skills and knowledge in the construction and operation of electrical equipment and the hazards involved and are permitted to work on or near exposed or energized parts.
Service Point	The point of connection between the facilities of the serving utility and the premises wiring.

6 Key Documents / Tools / References

The following codes, standards, and regulations form the basis for the requirements of this section of the standard. The latest addition of the following standards shall be followed along with the adoption of those standards to applicable regulations.

6.1 American Petroleum Institute (API)

American Petroleum Institute (API)

API RP 14F, Recommended Practice for Design and Installation of Electrical Systems for Fixed and Floating Offshore Petroleum Facilities for Unclassified and Class I, Division 1 and Division 2 Locations

API RP 500, Recommended Practice for Classification of Locations for Electrical Installation at Petroleum Facilities Classified as Class I, Division 1 and Division 2

API RP 505, Recommended Practice for Classification of Locations for Electrical Installation at Petroleum Facilities Classified as Class I, Zone 0, Zone 1 and Zone 2

6.2 American Society of Testing and Materials (ASTM) / American National Standards Institute (ANSI)

ASSE Z87.1 Practice for Occupational and Educational Eye and Face Protection

ISEA Z89.1 Industrial Head Protection for Electrical Workers

6.3 Institute of Electrical and Electronic Engineers (IEEE)

IEEE 1584, Guide for Performing Arc-Flash Hazard Calculations

6.4 National Fire Protection Association (NFPA)

NFPA 70, National Electrical Code

NFPA 70 E - Standard for Electrical Safety in the Workplace

6.5 Occupational Safety and Health Standards, 29 CFR 1910 Subpart S - Electrical

Specific Sections of focus include:

OSHA 29 CFR 1910.137 - Electrical Protective Devices

OSHA 29 CFR 1910.304 - Wiring design and protection

OSHA 29 CFR 1910.333 - Selection and Use of Work Practices

OSHA 29 CFR 1910.399 Subpart S Definitions - Qualified Person

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