



National Electric Power Regulatory Authority
Islamic Republic of Pakistan



Power Safety Code for Licensees

Second Edition
June, 2021

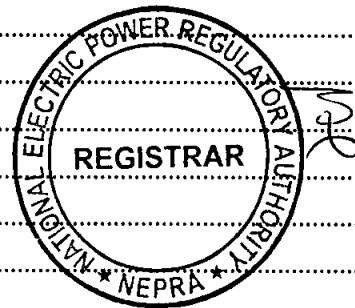




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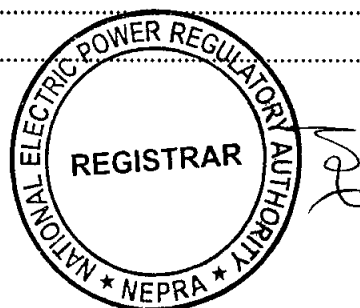
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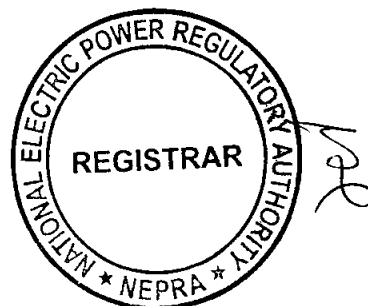


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1. Purpose

- 1.1. In exercise of the powers, conferred by Section 14B(5), 18B(2)c, 19d, 21(2)f, and 34 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (XL of 1997) (hereinafter referred to as the "Act") and provisions as prescribed in NEPRA Performance Standards Rules, Grid Code, Distribution Code and Consumer Service Manual, the National Electric Power Regulatory Authority devised this Power Safety Code (the "Code").
- 1.2. To ensure that the Licensees and registered persons/ entities (the "Licensees"), during the conduct of their operations including but not limited to construction, installation, operation, maintenance, turnaround, rehabilitation, standby, alteration, decommissioning, mothballing, and demolition are planned and conducted in an efficient and safe way without compromising on occupational Health, Safety and Environment aspects.
- 1.3. First edition of Power Safety Code is revised and updated as required by the document revision cycle. This revision opportunity is also utilized to align this document with the Act to address all Licensees and registered persons/ entities.
- 1.4. Licensees shall have highest priority to;
 - Protect the lives and well-being of employees, contract workers and general public including visitors,
 - Minimize any impact or damage to the environment,
 - Minimize damage to the equipment, property and associated facilities as well as that of neighboring areas near to licensee operations,
 - Minimize economic losses and disruption to business for safe and smooth operations.
- 1.5. For the purpose of maintaining highest standards of HSE at workplace, all the licensees shall follow NEPRA Act, Rules & Regulations made thereunder, this Power Safety Code and other applicable documents.





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2. Definitions

The terms and expressions used but not defined in this code shall have the meaning assigned to them in the Act.

2.1. Act

The term "Act" means the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (XL of 1997).

2.2. Annual

The period of one Fiscal year, starting from July 1 and ending on June 30.

2.3. Authority

The term "Authority" means the National Electric Power Regulatory Authority (NEPRA) established under Section 3 of the Act.

2.4. Building

A structure with a roof and walls.

2.5. Calibration

Calibration is the process of configuring an instrument to provide a result for a sample within an acceptable range.

2.6. Contractor

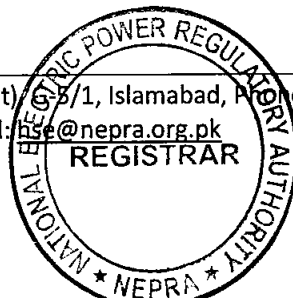
External organization providing services to the licensee in accordance with agreed specifications, terms and conditions.

2.7. Contractor Employee

Person employed by licensee as a contractor or sub-contractor engaged in providing services for licensee on the company's worksites.

2.8. Competent Person

A medically and physically fit person who is assigned, designated and authorized in writing by the Licensee to perform a specific type of duty or duties or to be at a specific location or locations, having relevant professional qualification, training, competency, experience, technical knowledge, certification or license/ permit to perform assigned roles and responsibilities.





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2.9. Distribution

The term "Distribution" means the ownership, operation, management or control of distribution facilities for the movement or delivery to consumers of electric power but shall not include the ownership, operation, management and control of distribution facilities located on private property and used solely to move or deliver electric power to the person owning, operating, managing and controlling those facilities or to tenants thereof.

2.10. Distribution Company

The term "Distribution Company" means a person engaged in the distribution of electric power.

2.11. Distribution Facilities

The term "Distribution Facilities" means electrical facilities operating at the distribution voltage and used for the movement or delivery of electric power.

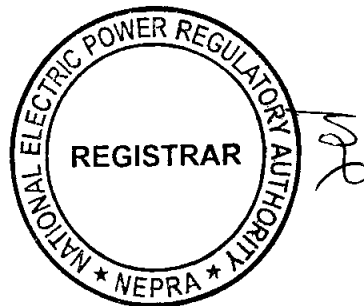
2.12. Distributed Control System (DCS)

DCS is used in Power Plants, a computerized process control system for operation usually with many control loops, used for system management and data collection.

2.13. Employee

An Employee is anyone who perform services for which the employer has the right to control what will be done and how it will be done regardless if the employer is given freedom of action. Employment can be permanent, temporary and regular. Examples of employees include:

- Full-Time Employees.
- Part-Time Employees.
- Temporary Employees.
- Seasonal Employees.
- Freelancers.
- Temporary workers.
- Consultants.





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2.14. Environment

Surroundings in which organization operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation.

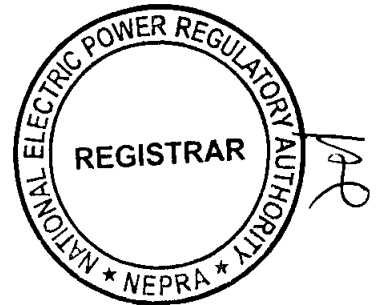
2.15. Environmental Impact Assessment

Environmental Impact Assessment (EIA) is a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.

2.16. Environmental Aspect

An element of licensee activities, products and services that can and/or does interact with the environment. Examples of environmental aspects categories are:

- Air Emissions,
- Energy,
- Soil contamination,
- Water contamination,
- Biodiversity,
- Materials (Procurement),
- Materials (Storage and Use),
- Effluent discharges,
- Solid Waste Generation,
- Sludge Generation,
- Freshwater/Seawater consumption,
- Crude Oil consumption (consumption of nonrenewable resources),
- Noise.



2.17. Environmental Impact

Any change to the environment, whether adverse or beneficial, resulting from Licensee's activities, product and services.

2.18. Exposure

Presence of a hazardous substance (Solid, Liquid or Gas), or physical factors (noise, temperature, vibration, non-ionizing, and ionizing radiation) in an area where a person works.



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2.19. Excavation

Any man-made cavity or depression in the earth's surface, including its sides, walls, or faces, formed by earth removal. This could be carried out manually, by power tools or mechanical excavator.

2.20. Facilities

Space or equipment necessary for doing an operation or process.

2.21. Fire

The combustion of any material and substance gives rise to a fire. The evidence of combustion shall be indicated by one or a combination of the following fire signs;

- Visible flames including flashes and arcing,
- Visible glow of combustible materials resulting from elevated temperature,
- Damage or destruction of materials or equipment resulting from elevated temperature, including short-circuiting, overheating or spontaneous combustion,
- Smoke.



2.22. Generation

The term "Generation" means the ownership, operation, management or control of generation facilities for delivery or sale of electric power and not solely for consumption by the person owning, operating, managing, and controlling those facilities.

2.23. Generation Company

The term "Generation Company" means a person engaged in the generation of electric power.

2.24. Generation Facility

The term "Generation Facility" means the electrical facility used for the production of electric power.

2.25. Goal

Goals are general guidelines that explain what needs to be achieved in the organization with management intervention, providing resources and support. Goals should be specific, measurable, attainable, realistic, and time-bound (SMART).



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2.26. Guarded

Covered, shielded, fenced, enclosed, or otherwise protected by means of suitable covers, casings, barriers, rails, screens, mats, or platforms to remove the likelihood of approach or contact by persons or objects to a point of danger.

2.27. Hazard

A source of potential harm, in terms of human injury, damage to health, property, impact to environment, physical resources and/or business.

2.28. Heavy Equipment

Any type of equipment used for, heavy lifting, crane, mobile elevation, mobile equipment or plant, construction equipment, and earth moving equipment, etc.

2.29. HSE

Occupational Health, Safety & Environment

2.30. HSE Performance

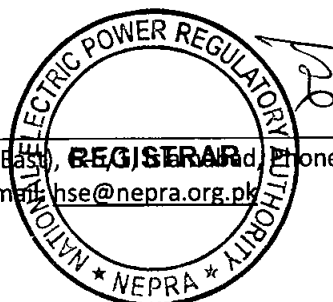
HSE performance is related to the effectiveness of the prevention of injury and ill health to workers, provision of safe and healthy workplaces and prevention of impact and/or damage to the environment.

2.31. Immediate Cause and Root Cause

An immediate cause (also known as a "Causal Factor" or "Direct Cause") is a human error/mistake or equipment failure that directly leads to the incident or makes the incident's consequences worse. A root cause (also known as a "basic cause") is an underlying reason why an immediate cause occurred and is virtually always a specific deficiency in a Management System. The root cause when fixed, will prevent (or significantly reduce the likelihood of) the incident recurrence. Management systems include procedures, standards, planning, design, personnel selection, supervision, safety/hazard reviews, emergency planning, work permitting, trainings, communications, maintenance, inspection, behavior of people, etc.

2.32. In-charge

The person in-charge who holds a position for control and management of specific equipment, devices, activities, operations and performing, directing or authorizing tasks.





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2.33. Incident / Accident

An unplanned event in which an adverse or undesirable consequence of workplace injury, fire, explosion, damage, or an environmental impact could occur.

Undesirable consequences related to such incidents include but are not limited to the following:

- Fires
- Work-related injuries
- Process safety incidents
- Property or equipment damage.
- Unfavorable impact on the general public.
- Shortness of breath due to oxygen deficiency in a confined space
- Toxic gases exposure resulting in dizziness
- Release of chemical or hydrocarbon from a tank

2.34. Incident Direct Cost

Incident Direct Cost refers to cost of direct damage, repairs or replacement, clean-up, material disposal and environmental remediation resulting from the incident.

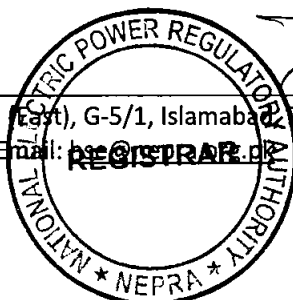
Direct Cost does not include indirect costs such as operational loss, business opportunity loss, business interruption and feedstock/electricity losses, loss of profits due to equipment outages, cost of obtaining/operating temporary facilities.

2.35. Inspection

An examination of a product, process, service, or installation or their design and determination of its conformity with specific requirements or, on the basis of professional judgment, with general requirements.

2.36. Key Performance Indicator

A Key Performance Indicator (KPI) is a measurable value that demonstrates how effectively an organization is achieving goals and objectives. Key Performance Indicators (KPIs) are in numbers for the goals and objectives to review and monitor its status for effective implementation.





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2.37. Legal Requirements

National and provincial laws that could be act, rule, regulation, code, directive, ordinance, permit, license or other government authorization.

2.38. Licensee

The term "Licensee" means a holder of a license under the Act.

2.39. Likelihood

Frequency of occurrence of an event/incident.

2.40. Live Parts (Energized)

Any live, exposed, guarded or unguarded electrical conductors or components that are not placed in an electrically safe work condition.

2.41. Machinery

An apparatus using or applying mechanical power to perform a particular task.

2.42. Material

A raw material used in the primary production or manufacturing of goods.

2.43. Near Miss

Near miss is an incident which does not result in injury, illness or loss, but which has the potential for injury, or illness or loss.

2.44. Objective

Objectives define strategies or implementation steps to attain the identified goals. They are more specific and outline the "who, what, when, where, and how" of reaching the goals.

2.45. Occupational Health & Safety

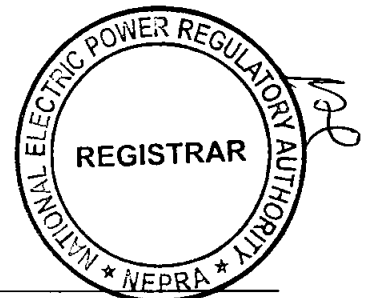
Intended to the conditions and factors that affect, or could affect, the health and safety of employees, temporary workers, contractor personnel, visitors or any other person in the workplace.

2.46. On-job Fatality

An on-job injury or illness that results in death.

2.47. On-job Injuries or illnesses

On-job Injuries or illnesses should be categorized as follows:





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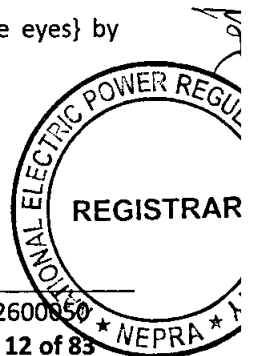
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2.47.1. First Aid Injury or illness

Minor on-job injury or illness requiring one-time treatment, subsequent observation and consultation post-injury during a visit to the medical facility. The treatment, even if administered by a physician, does not require medical or surgical follow-up intervention (Examples: diagnostic procedures such as x-rays and blood tests. Treatments such as tetanus shots, bandaging, using eye patches, hot or cold compression therapy).

A complete list of all treatments considered as First Aid is provided below (Any minor medical treatment which is not in the list should be considered as a Medical Treatment injury or illness)

- Using a non-prescription medication at non-prescription strength level,
- Administering tetanus immunizations,
- Cleaning, flushing or soaking wounds on the surface of the skin,
- Using wound coverings such as bandages, Band-Aids, gauze pads, etc.; or using butterfly bandages or Steri-Strips,
- Using hot or cold therapy or treatments,
- Using any non-rigid means of support, such as elastic bandages, wraps non-rigid back belts, etc.,
- Using temporary immobilization devices while transporting an accident victim (e.g., splints, slings, neck collars, back boards, etc.),
- Drilling of a fingernail or toenail to relieve pressure, or draining fluid from a blister,
- Using eye patches,
- Removing foreign bodies from the eye using irrigation or a cotton swab method only,
- Removing splinters or foreign material from areas {other than the eyes} by irrigation, tweezers, cotton swabs or other simple means,
- Using finger guards,
- Drinking fluids for relief of heat stress,
- Application of antiseptics during the first visit to medical personnel,





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- First or second-degree burn(s) that do not require further treatment,
- Application of ointments to abrasions to prevent drying or cracking,
- Application of physiotherapy during the first visit to medical personnel.

2.47.2. Medical Treatment Injury or illness

An on-job injury or illness that is more serious than First Aid injury or illness (Examples: Treatment requiring sutures, use of tweezers to remove splinters from eye; rigid means to immobilize part of body). Medical Treatment Case (MTC's) include all cases involving but not limited to:

- Using wound closing devices such as sutures, staples, etc.,
- Using devices with rigid stays or other systems designed to immobilize parts of the body (does not include any non-rigid means of support),
- Removing splinters from the eye with tweezers and other complex means

2.47.3. Restricted Duty Injury or Illness

An on-job injury or illness that results in restricted work or job transfer. The employee/contractor cannot perform an activity he regularly performs (Example: A sprained ankle resulting in a re-assignment from field to a desk job). Time period does not include restricted work activity on the day of the injury or illness. Examples of how to determine a restricted work case are:

- Employee/contractor is restricted from performing one or more of the routine functions (work activities which the employee/contractor regularly performs at least once a week) of his job, or from working the full workday that he would otherwise have been scheduled to work.
- A medical physician recommends that the employee/contractor cannot perform one or more of the routine functions of his job, or not work the full workday that he would otherwise have been scheduled to work.

2.47.4. Lost Time Injury or Illness

An on-job injury or illness that involves one or more days away from work beyond the day the injury occurred.





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2.48. Permissible Exposure Limit (PEL)

PEL is the occupational exposure standard that refer to the maximum permissible exposure to air-borne chemicals to which nearly all healthy persons can be exposed to an average 8 hour period per day (TWA) without adverse health effects. Detail information about PEL is primarily found in the Material Safety Data Sheet (MSDS).

2.49. Property Damage Incident

All safety incidents that result in damage to the licensee property/structure/equipment however excludes damage to the property/structure/equipment due to fire, or wear and tear. Property damage incidents may be caused by traffic crashes, cranes related incidents, forklift hitting or damaging an equipment, resulting in direct cost as per criteria set by licensee.

2.50. Process

A series of actions or steps taken to achieve an end result.

2.51. Product

The goods or energy produced/generated/manufactured for sale.

2.52. Registered Person or Registered Entity

Its mean the persons or entities registered under section 25A of the Act.

2.53. Risk

Combination of the frequency (likelihood) of occurrence of event/incident and the consequences (severity) of that event/incident.

2.54. Risk Assessment/Treatment

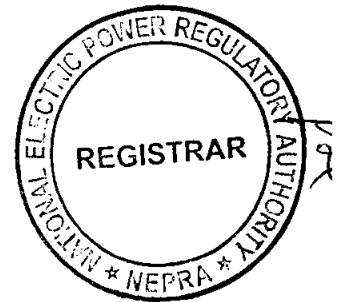
Overall process of Hazard identification, analysis, evaluation of risk level and application of controls.

2.55. Safety Critical Protection Devices

Safety critical protection devices, limit or stop the abnormal condition in system or flow of current in the event of a ground fault, overload, or short circuit in the circuit/ wiring system, whose failure can result in serious injuries, significant property damage or environmental impacts.

2.56. Short Term Exposure Limit (STEL)

The maximum concentration to which workers may be exposed for a period of time up to 15 minutes continuously without suffering irritation, chronic tissue damage, or narcosis which





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may lead to accidental injury. In addition, exposure to STEL shall not be repeated more than 4 times per day. Information about STEL is found in Material Safety Data Sheet (MSDS).

2.57. Severity

Level of consequences/outcomes of an event/incident.

2.58. Shall

The term "shall" indicate a mandatory requirement.

2.59. Should

The term "should" indicate a suggested/ optional recommendation.

2.60. System

A set of things working together as parts of a mechanism or an interconnecting network.

2.61. Task

A piece of work activity to be completed or undertaken.

2.62. Task Steps

Each separate part of a work activity.

2.63. Time Weighted Average (TWA)

Time-weighted average concentration for a normal 8-hour working day, and a 40-hour working week, to which nearly all workers may be repeatedly exposed day after day, without adverse effects. Information about TWA is found in Material Safety Data Sheet (MSDS).

2.64. Tools

A device, one held in the hand, used to carry out a particular task.

2.65. Transformer

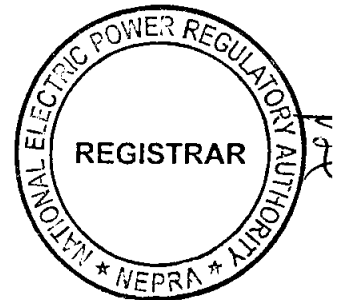
Generated energy is regulated to increase or decrease voltage.

2.66. Transmission

The term "Transmission" means the ownership, operation, management or control of transmission facilities.

2.67. Transmission Facilities.

2.67.1. The term "Transmission Facilities" means electrical transmission facilities including electrical circuits, transformers and sub-stations operating at or above the minimum





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transmission voltage but shall not include:

2.67.2. Electrical circuits forming the immediate connection between generation facilities and the transmission grid to the extent that those circuits are owned by a generation company and are directly associated with that company's generation facilities.

2.67.3. Specified facilities operating at or above the minimum transmission voltage which the Authority, upon an application by a licensee under Section 20 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997, shall be owned and operated by a distribution licensee.

2.68. Turnaround

Turnaround is a scheduled/ planned stoppage of part or all of a plant/ grid/ sub-station operations for maintenance, repair, improvement, replacement or upgradation of equipment.

2.69. Utilities

Services such as gas, water, electricity and telecommunication, etc.

2.70. Vehicles

A thing used for transporting people or goods.

2.71. Visitor

Visitor means a person, other than an employee or contractor, permitted to enter a work area under permission by the authorized person.

2.72. Waste

Wastes is generated during operation has no further use or consumption, required to be disposed.

2.73. Working on Live Parts

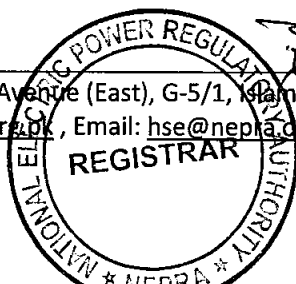
Coming into contact with the live electrical components with hands, feet, other body parts, tools, probes or test equipment, etc.

2.74. Workplace

Place under the control of the licensee where a person needs to be or to go for work purposes.

2.75. Worksites

Includes licensee owned and directly managed properties.



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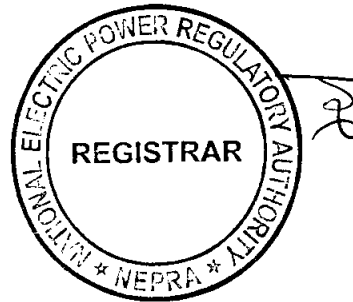


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3. General Instructions

- 3.1. Licensee shall ensure compliance with Power Safety Code, together with NEPRA Performance Standards Rules, Grid Code, Distribution Code and Consumer Service Manual and other applicable national and provincial legal requirements as necessary. The Safety Code enables the Licensee to operate in a manner that protects and promotes the health & safety of employees, contractors, the general public, visitors and protect the environment.
- 3.2. Licensee shall establish, implement, monitor and maintain a system to identify Health, Safety and Environment (HSE) hazards and to reduce risks to "As Low as Reasonably Practicable" (ALARP).
- 3.3. Licensee shall promote a HSE culture and provide safe and healthy workplace. The Licensee shall ensure that safe working is integrated into every aspect and area of business. Safety culture shall be based on personal leadership, commitment, collaboration and active involvement.
- 3.4. The licensee shall foster openness and dialogue, and be open to the HSE concerns of employees, contractors and other interested parties. It shall also be ensured that HSE requirements are known, understood, implemented and applied at all levels.
- 3.5. The licensee shall treat all injuries, occupational illnesses and HSE incidents as preventable and set out goals for all of them as zero.



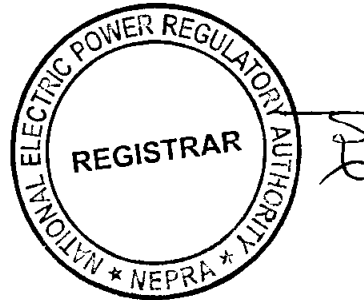


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4. Resources

4.1. The Licensee shall be responsible to utilize its own resources for the establishment, implementation, maintenance and continual improvement of the HSE system to avoid injuries to employee, contractor, visitor, member of general public, loss of equipment/ property or adverse impact to the environment.

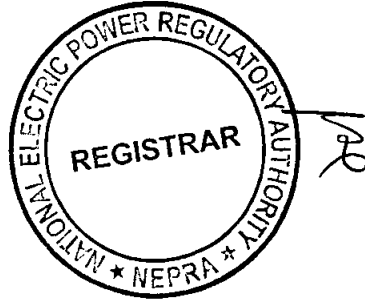




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5. Non-Compliance to Power Safety Code

5.1. If Licensee fails to comply with the requirements of Power Safety Code and other applicable documents, NEPRA may initiate legal proceedings against the licensee or registered persons under NEPRA (Fines) Rules, 2002.





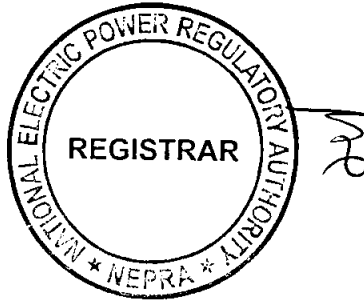
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6. Licensee HSE Policy

6.1. Licensee's top management shall establish, implement and maintain a HSE Policy, by including a commitment to provide safe and healthy working conditions, eliminate hazards and reduce HSE risks for the prevention of work-related injury, ill health and to protect the environment within the national and provincial legal requirements. The HSE Policy shall be communicated to interested parties, address continual improvement of the HSE system and ensure participation of workers.

6.2. The licensee shall ensure that the policy statement is reviewed with specified time and amended to reflect changes in the organization or statutory requirements.





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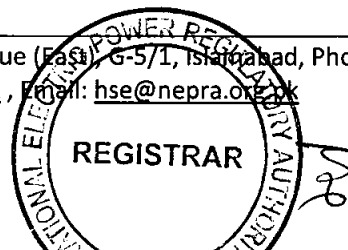
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7. Licensee HSE Management System Requirements

1. Licensee shall establish, implement, maintain and communicate "Occupational Health, Safety & Environment (HSE) Management System/ Manual" depending upon its own requirements, organizational needs, types of activities, processes, products, services and risks/ aspects. Licensee shall cover all his operational sites and adopt industry's best practices and standards related to his work activities besides compliance to Power Safety Code and other requirements.
2. HSE Management System/ Manual shall outline specific essential measures to be taken by Licensee to prevent injuries to company employees, contractor personnel, visitors, general public, natural environment and damages to property.
3. Roles and responsibilities shall be clearly identified and documented in HSE Management System/ Manual for all positions/ functions that are responsible for the control of system of construction, installation, operation, maintenance, testing, turnaround, and HSE critical activities. Roles and responsibilities shall be communicated to responsible and interested parties. It shall also cover operational interface or joint responsibilities of each job step by agreement, where required.
4. Licensee shall cover all definitions, glossary, abbreviations of all important terms and words being used, in his HSE Management System/ Manual.
5. Licensee shall submit his HSE Management System/ Manual in compliance to this Power Safety Code to NEPRA for approval within ninety (90) working days (from the effective date of this Code or award of license) and shall implement his HSE Management System/ Manual accordingly to eliminate or prevent incidents.
6. Licensee's written HSE Management System/ Manual shall address the following sections/ sub-sections as applicable as per licensee work activities/ job scope.

7.1 Compliance to the Legal and other Requirements

- 7.1.1. Licensee shall prepare and maintain a legal compliance register for national, provincial legal and other requirements as applicable regarding Health, Safety and Environment (HSE), including this Code.
- 7.1.2. Licensee shall comply with national, provincial legal and other requirements regarding Health, Safety and Environment (HSE) including this Code as applicable, such as but not limited to:

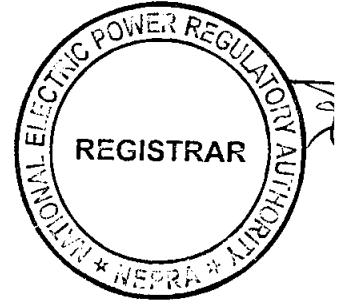




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- Electricity Act 1910,
- The Boilers Act 1923,
- Regulations of Mines Act 1923,
- Factories Act 1934,
- The Petroleum Act 1934,
- Electricity Rules 1937,
- The Petroleum Rules 1937,
- Gas Cylinder Rules 1940,
- Civil Defense Rules 1951,
- West Pakistan Factories Canteen Rules 1959,
- The Workmen Compensation Act 1923 and Rules 1961,
- The West Pakistan Hazardous Occupation Rules 1963,
- Pakistan Nuclear Safety and Radiation Protection Ordinance 1984,
- Civil Defense Ordinance 1987,
- Pakistan Environmental Protection Act 1997,
- Pakistan Environmental Assessment Procedures 1997,
- Environmental Sampling Rules 2001,
- National Environmental Quality Standards November 26, 2010,
- Boilers & Pressure Vessel Ordinance 2002,
- Mineral and Industrial Gases Safety Rules 2010,
- Explosives Rules 2010,
- Hazardous Substance rules 2014,
- Building Code of Pakistan Fire Safety Provision 2016,
- Provincial legal requirements.



7.2 HSE Management Team

- 7.2.1. The HSE management team shall be independent in all its functions under the direct control of Chief Executive Officer or equivalent.
- 7.2.2. HSE management team should be deployed to oversee critical activities.
- 7.2.3. Responsibilities and duties of the HSE management team shall be clearly defined.
- 7.2.4. Licensee shall provide full-time and experienced, qualified and trained HSE staff to execute, coordinate and implement the HSE Management System/ Manual. The



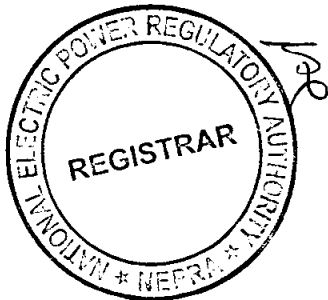
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minimum number of HSE staff member shall be evaluated on case-to-case basis, corresponding to the level of risk, criticality of operational activities, and required work supervision. The appointed HSE team shall be experienced and competent for the defined roles and responsibilities and shall possess at least one of the approved safety qualifications, such as NEBOSH International General Certificate, NEBOSH International Diploma in OH&S, OSHA Certificate or other approved Safety/ HSE Certificate/ Diploma.

7.2.5. The table below provides the minimum number of HSE staff required at construction project sites:

Table: Project Contractor Minimum HSE Staff Requirements			
Total No. of Employees	HSE Manager or Equivalent Position Required	Minimum No. of HSE Supervisor(s) Required	Minimum No. of HSE Officers Required
1 to 25	No	No	1 HSE Officer
26 to 50	No	1 Supervisor	1 HSE Officer
51-250	Yes	2 Supervisor	2 HSE Officer
251 to 500	Yes	3 Supervisor	1 HSE Officer for 50 Employees (or part thereof)
501 to 1,000	Yes	1 Supervisor for every 10 safety officers (or part thereof)	1 HSE Officer for 50 Employees (or part thereof)
1,001 to 5,000	Yes	1 Supervisor for every 10 safety officers (or part thereof)	20 HSE Officers plus additional 1 HSE Officer for 100 Employees (or part thereof)
5,001+	Yes	1 Supervisor for every 10 safety officers (or part thereof)	60 HSE Officers plus additional 1 HSE Officer for 150 Employees (or part thereof)



7.2.6. Licensee shall upload HSE staff contact details at NEPRA’s Data Exchange Portal as mentioned in Annexure-1 “HSE Team Contact Details” within seven (07) working days. Licensee’s representative shall also upload the revised and updated contact list, in case of new recruitment, transfer, resigned or in case of HSE organization change.



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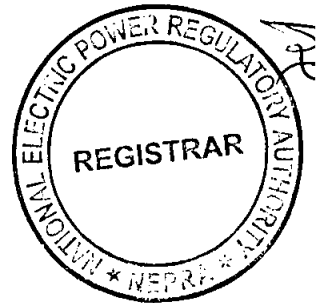
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7.3 Communication Plan

- 7.3.1. Licensee should establish, implement and maintain Internal and External Communication Plan with authorization and availability of nominated/ focal person for proper coordination and system control to avoid an incorrect, incomplete, inadequate or misleading communication, to communicate clear information message, to the right people at the right time, to control and monitor construction, installation, operation, maintenance, testing, turnaround and HSE critical activities.
- 7.3.2. Critical information/ message should be to the point, in a short, clear and simple manner. However, it should be ensured that information is received and completely understood by internal, external affected group, next shift personnel, contractors and end-user. All such critical communication shall be recorded in soft or hard form for a period of not less than one fiscal year.

7.4 Risk and Impact Assessments

- 7.4.1. Conduct Hazards/ Aspect Identification and Risk/ Impact Assessments to assess potential risks to employees, contractors, visitors, general public, and impact to natural environment, by eliminating or reducing Safety & Health Hazards and Environmental Aspects that arise from the Licensee's operations and activities, in order to ensure that all risks are identified in detail and reduced to As Low as Reasonably Practicable (ALARP) to avoid future incidents associated with:
- Licensee's employees/ contractors/ visitors/ general public.
 - Licensee's workplaces (hazardous locations).
 - Licensee's materials.
 - Licensee's equipment.
 - Licensee's operations, processes, maintenance, and activities.
- 7.4.2. Consideration shall be given to the following potential hazards, as applicable:
- Potential fire and electrical hazards.
 - Potential hazards that may be encountered from outside sources.
 - Hazardous materials identification, handling and storage.
 - Potential Hazards above ground level such as fall of a person from height, fall of objects from height, overhead power lines, loose sag, less clearance from the houses/ buildings/ trees, poles, fuel, chemical, hazardous dust/ fumes, pressure vessels/ boilers and so forth.





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- e. Potential Hazards on ground level such as electrical wires, electrocution, flash over, patrolling of lines, trimming of trees, hazardous area classification, night time operations, failure of tools, failure of a plant, buildings, possible flood, adverse weather conditions, high wind, fog, rain, lightning or hazards from nearby plants or industry. Hazard created by building, facilities, workplaces, machinery, equipment, vehicles at workplace, tools, utilities, In-coming and Out-going material/ chemicals/ substances/ product/ waste, hazardous dust/ fumes routine/ non-routine and emergency activities or natural hazards.
- f. Potential underground hazards such as buried utilities, high water table, building foundations, underground wastewater, unstable soil, chemical/ trash dump area, ash storage, voids in the earth (caves) and underground fuel/ chemical storage and hazardous dust/ fumes.
- g. Hazards related to movement of vehicles (ground settlement and road cracks aspects) from both inside and outside the facility of the licensee.
- h. Licensee shall identify Environmental Aspects. All identified significant environmental aspects shall be treated and handled in compliance with applicable national and provincial legal requirements.
- i. Licensee shall develop "Site Specific Environmental and Social Management Plan (ESMP)" in compliance with the Pakistan Environmental Protection Act 1997 and Pakistan Environmental Assessment Procedures 1997 for the effective management of the environmental impacts that could occur at the projects, during the facilities' operation and maintenance.
- j. Licensee shall identify existing preventive controls for each identified hazard and provide recommendation(s) for additional control(s) for high risks to reduce risk levels to As Low as Reasonably Practicable (ALARP).
- k. Risk/ Impact Assessments shall be reviewed by a competent team at least every three (03) years, or in case of a major emergency, or a change in equipment or process, or a chemical or new critical Risk/ Impact identified during study, or internal/ external audit recommendations, as deemed necessary.



7.4.3. Application of Controls

Depending on the nature and scale of the hazard under assessment when determining controls, or considering changes to existing controls, consideration shall be given to reducing the risks according to the following hierarchy:



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- a. Elimination,
- b. Substitution,
- c. Engineering Controls,
- d. Administrative Controls,
- e. Personal Protective Equipment.

7.5 HSE Meetings

7.5.1. Licensee shall plan and conduct Safety Meetings at top management level on quarterly basis to address the following:

- Review previous minutes of meeting.
- Review the implementation and compliance of this Power Safety Code.
- Review Annual HSE Goals, Objectives and KPI's for effective implementation.
- Discuss HSE Performance and Statistics.
- Discuss Near Miss/ Incident Alert as lessons learnt.
- Discuss critical Near Miss or Safety Suggestion, if any.
- Review training plan and records.
- Discuss safety issues related to operations, contractors, tools, equipment, work environment and work practices with proper resolution for mitigation.

7.5.2. Attendance record shall be maintained for the period of one fiscal year.

7.5.3. Meeting minutes shall be recorded, distributed and posted at notice board within three (03) working days.

7.5.4. NEPRA may call a virtual or physical meeting of licensee's HSE personnel on monthly or quarterly basis, depend on their HSE Performance and Statistics.

7.6 HSE Orientations

7.6.1. Licensee shall develop and conduct the HSE Orientation (Multi-Language), for all new employees and contractors to help them get familiarized with the company HSE policy, HSE system, site specific hazards, response in case of an emergency, other important company safety and security requirements.





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7.7 Job Specific Trainings

7.7.1. Licensee shall provide Job Skills Competency Training/ Activity Specific Training primarily for new employees or new contractor, or refresher training for those who have not been appointed as skilled, competent and authorized technician, electrician, wireman, or those who currently perform work beyond their obligatory scope of competence.

7.7.2. The Job Skills Competency Training/ Activity Specific Training shall also comprise but not be limited to the following aspects as per job trade of a person:

a. HSE Principles.

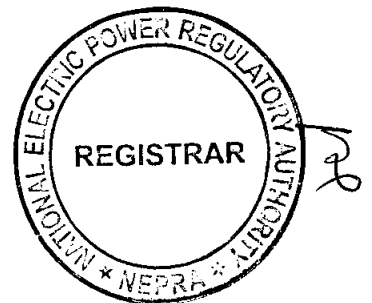
- Identification, elimination, controlling of Hazards/ Risks to avoid incidents,
- Identification of unsafe conditions/ acts for safe operation.

b. Examples of unsafe conditions;

- Improper Guarding,
- Defective material or equipment,
- Hazardous arrangements,
- Hazardous weather,
- Hazardous place of work,
- Insufficient lighting,
- Improper ventilation,
- Unsafe Clothing,
- Unsafe Design & Construction.

c. Examples of Unsafe Acts;

- Operating without Authority or Warning,
- Working without PTW, when required,
- Operating or Working at unsafe Speed,
- Making safety devices In-operative/bypassing,
- Use of unsafe equipment or improper use of equipment
- Unsafe Loading,





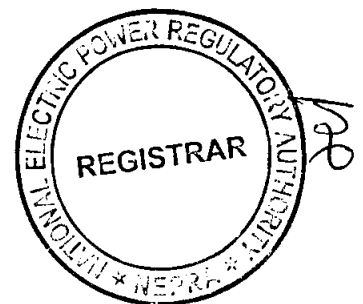
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- Placing or Leaving Objects,
- Mixing improper Packing,
- Taking unsafe Position or Posture,
- Working on equipment without taking proper precautions,
- Non-vigilant and inattentive behavior,
- Distracting, Teasing or Startling,
- Failure to use safe clothing or protective equipment.

d. Operations & Maintenance

- Operations & Maintenance Manual/ SOP's/ Work Instructions,
- Shift Duties,
- Reporting of duty in an unfit condition,
- Assistance from employees not on duty,
- Operation, Maintenance and Inspection of Equipment,
- Fire Precautions,
- Working in a confined space,
- Working on road,
- Work in Substations/ Grid/ Hazardous Area,
- Weather information,
- Interference of animals,
- Visitors,
- Working of employees of other organizations,
- Identification of operating equipment.



7.8 HSE Awareness Trainings

- 7.8.1. Licensee shall provide information, instruction, training and supervision to all their employees and contractors as far as necessary, to understand processes and risks, as governed by the national and provincial legal requirements, to ensure the safety of all personnel at the work place, and for protection of equipment & the environment.



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7.8.2. HSE awareness training plan shall cover following HSE related trainings but not be limited to; work permit issuer & receiver training, electrical safety, isolation, PPE/T&P, fire watch, standby man, fire prevention, first aid, working at height, confined space and emergency & rescue, waste management, and environmental protection, etc.

7.8.3. Refresher training should also be planned once in every two (2) to five (5) years according to the validity of the training and nature of competency/ skill/ work area.

7.9 Control of Visitors and Animal Access

7.9.1. Entry of unauthorized visitors and vehicles to the restricted and operational area shall be controlled.

7.9.2. Visitor shall not be permitted access to the restricted and operational area unless accompanied by a company employee.

7.9.3. Visitor shall be in appropriate PPE all the time in restricted and operational area according to the HSE requirements.

7.9.4. Access of stray or street animals shall be controlled.

7.10 Licensee Contractors, Sub-contractors & Suppliers

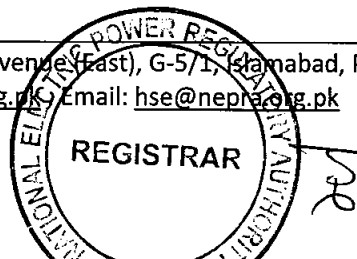
7.10.1. Licensee shall ensure full compliance of its Contractors, Sub-contractors & Suppliers and other system users to safety requirements as outlined in this Code, and project specific additional HSE requirements.

7.10.2. Licensee shall take reasonable and necessary measures to protect Contractors, Sub-contractors & supplier's injuries, or damages (or loss) of any property during the works or tests under the contract.

7.11 Management HSE Walk-through/ Site Tours

7.11.1. Licensee Management should plan and conduct regular HSE Walk-throughs/ Site Tours, attended by senior management in Licensee areas such as Operation Areas, Grid, Substation, Compressor, Pump, Control Room, Pressure Vessel, Turbine, Heat Exchanger, Cooling Tower, Warehouse, Fuel/ Oil Storage, Utilities and Loading & Unloading areas, etc.

7.11.2. HSE Walk-throughs/ Tours should identify the potential unsafe conditions, unsafe acts, housekeeping deficiencies and other observations that may impact the safety and health of employees and protection of facilities including impact to environment.



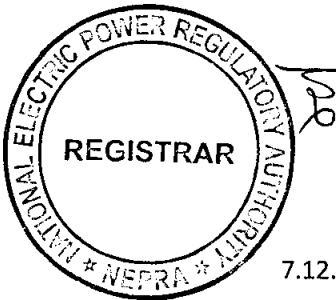


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7.12 Standard Operating Procedure (SOP)/ Work Instructions

- 7.12.1. Licensee shall establish, implement and maintain "Standard Operating Procedure (SOP)/ Work Instructions" to describe Occupational Health, Safety, and Environment as per Licensee operational risks to ensure Licensee operations are carried out in a safe and environmentally responsible and protective ways; and to make safe and healthy work environment for employees and contractors.
- 7.12.2. SOP/ Work Instructions should provide a clear understanding of the detailed operating parameters and limits for safe operation, according to equipment manufacturer's manual, including an explanation of HSE consequences of operation outside the parameters and limits, and a description of steps to be taken to correct and/or to avoid deviations/ failure/ trip.
- 7.12.3. SOP/ Work Instructions should include following contents, as required depending upon Licensee operations such as SOP Purpose, Scope, Definitions/ Abbreviations, Responsibilities, Operation Description, Potential Hazards, Safety, Health and Environmental Controls/ Precautions, Specific Administrative Controls, Specific Engineering Controls, Specific Personal Protective Equipment (PPE), Operation Modes (Temporary, Normal, Start-up, turnaround, Emergency), Operational Limits/ Parameters, Maintenance, Records and Check Lists/ Log Sheets.
- 7.12.4. SOP/Work Instructions shall be reviewed at least every three (03) years or, in case of a major incident or change in equipment, process or chemical or new critical risk identified, and/or internal/ external audit recommendation.
- 7.12.5. The licensee shall provide adequate training and supervision to ensure all employees and contractors understand the required steps as defined in the SOP/ work instructions and perform their work accordingly.



7.13 Documents and Record Management

- 7.13.1. Licensee should establish, implement and maintain HSE Documents and Record Management System either in soft or hard forms, in order to ensure the effective control of documented HSE information.
- 7.13.2. The control of all types of documents created, used and maintained by Licensee should include document creation, identification, numbering, revision, concurrence, approval, issuance, distribution, accessibility/ access control, change control, cancellation and periodic review.
- 7.13.3. This will ensure accessibility of the right information to the right personnel at the right



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time to prevent unintentional use of obsolete HSE documents/ information. HSE documents/ information should have identification, protection, storage, retrieval, retention, and authorized disposal of various Data and Records.

7.13.4. Critical records shall be retained and preserved by licensee as per equipment manufacturer recommendation, legal & other requirements or at least for three (03) years, if not define.

7.13.5. Fiscal Year from July 1 to June 30, will be followed for HSE data and record.

7.14 Engineering and Construction Management

7.14.1. Establish, implement and maintain a section or unit for Engineering & Construction Management, which shall be responsible for managing engineering documents, conduct detailed engineering design, identify specifies requirements for the application of Standards, Specification, Rules, Regulations and Codes for Engineering & Construction works to avoid substandard construction and installation, specifies the protection devices and schemes, prescribes mandatory design bases and performance criteria of electrical power systems, specifies critical operational parameters, execution of electrical equipment and materials.

7.14.2. Identify, install and maintain protective system/ distance relays for abnormal conditions (short-circuits, overloading, lines fall on rocks or any dry surface, which may cause damage to people or property, etc.) including grounding of circuits, apparatus and infrastructures. ELCBs (earth leakage circuit breakers), RCDs (residual current devices) and RCCDs (residual current circuit breakers) shall be used as per design in circuits in order to prevent fires and shocks in electrical installations.

7.14.3. Protective relays and protection schemes set points/ sizes should be sufficient for the current rating to immediately 'blow' the fuse or trip the circuit breaker within the specified time, in case of fault or overcurrent.

7.14.4. All design aspects/ design criteria shall be provided to NEPRA as and when required and complete record shall be maintained by Licensee.

7.14.5. A safety corridor should be considered during design phase to protect the transmission systems from the windfall, trees and branches and other potential hazards that may result in damage to the system, power failures or forest fires.

7.14.6. Minimum clearance for overhead Low Tension/Voltage (400 Volts and below) lines from house/ building shall be:





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- Vertical clearance above the roof top: 8 feet.
- Horizontal clearance from side of the building: 4 feet.

7.14.7. Licensee shall install insulated conductors (aerial bundled cables/conductors) for new LT lines or while replacement of spoiled bare conductors, especially in narrower/ congested areas having less clearance from houses/ buildings. Insulated conductor will prevent accidental contact and can be stand in close proximity to trees/ houses/ buildings and will not generate sparks, if touched.

7.14.8. Minimum clearance for overhead High Tension/Voltage (11 KV & 33 KV) lines from house/ building shall be:

- Vertical clearance above the roof top: 12 feet.
- Horizontal clearance from side of the building: 6 feet.

7.14.9. Minimum horizontal and vertical clearance for overhead High Tension/Voltage (66 KV) lines from house/ building shall be 15 feet:

7.14.10. Minimum clearance for overhead High Tension/Voltage (132 KV) lines from house/ building shall be:

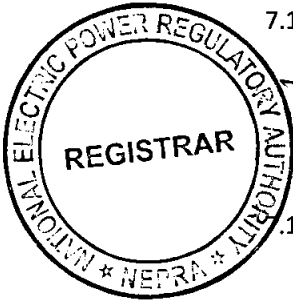
- Vertical clearance above the roof top: 17 feet.
- Horizontal clearance from side of the building: 20 feet.

7.14.11. Minimum clearance for overhead High Tension/Voltage (220 KV) lines from house/ building shall be:

- Vertical clearance above the roof top: 20 feet.
- Horizontal clearance from side of the building: 25 feet.

7.14.12. Minimum clearance for overhead High Tension/Voltage (500 KV) lines from house/ building shall be:

- Vertical clearance above the roof top: 25 feet.
- Horizontal clearance from side of the building: 30 feet.



7.15 Operation and Maintenance

7.15.1. All critical high risk activities including boiler/ turbine operations, turnaround/ start-up, access to high voltage system and high voltage switching operations, high voltage capacitor discharge, working in grid, substation, feeder, panels, transformer, overhead lines, regulator, single or multiple circuit, dead apparatus/lines, working at height, solvents cleaning, handling of toxic or hazardous materials, fiberglass thermal



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insulation, explosives, radioactive material, pressure vessels, underground man-holes shall be performed safely in compliance to Licensee Operation/ Maintenance Procedure, SOP, or Manufacturer's manual.

- 7.15.2. Licensee shall implement all necessary precautions to avoid any leakage of electrical current or hazardous energy from its system/ infrastructure to harm human life.
- 7.15.3. Bonding and grounding conductors shall be provided where needed to dissipate static charge accumulations.
- 7.15.4. Operation and maintenance activities shall be carried out by experienced, trained and authorized employees/ contractors. Alternatively, workers can work under the direct supervision of experienced, trained and authorized employees/ contractors, to gain the necessary training and experience.
- 7.15.5. Licensee shall ensure effective coverage of critical high-risk activities under close and direct supervision to reduce incidents/ near misses. Chance of incident is higher during shutdown and start-up of plant/ equipment during maintenance due to short cuts by employee/ contractor to finish jobs.
- 7.15.6. Voltage testing including Hi-pot tests (AC/DC), power frequency, impulse voltage withstand tests and high current tests shall be performed safely in compliance to Licensee Operation/ Maintenance Procedure, SOP, or Manufacturer's manual.
- 7.15.7. Protections/ controls/ interlocks shall be intact and shall not be by-passed or modified without approved Management of Change (MOC).
- 7.15.8. Isolation shall be done for maintenance activities, whenever required.
- 7.15.9. Switching operations for isolation of the transmission network shall be well coordinated with relevant control center.
- 7.15.10. Safe working of remotely and automatically controlled equipment shall be established.
- 7.15.11. Combustible and flammable materials shall be removed from the area.
- 7.15.12. Gas Testing shall be conducted as per Task Risk Assessment/ JSA/ Permit to Work at same elevation and above/ below elevation to test oxygen deficiency and/or for flammable or toxic gases and vapors.
- 7.15.13. Gas cylinders shall be secured in an upright position with proper labels and a safety cap shall be installed when not in use.





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- 7.15.14. Use cylinder trolleys, material baskets, cylinder racks, and other proper types of equipment to transport cylinders.
- 7.15.15. Use approved pressure-reducing regulators with a check valve connected to the cylinder valve on all cylinders.
- 7.15.16. Always close the cylinder valve before attempting to stop leaks.
- 7.15.17. Inspect cylinders for safe condition before use. Inspect all gauges, valves, regulators, hoses, and cylinders for damage and valid hydro test date.
- 7.15.18. Protect cylinders from direct flame, sunlight, and other heat sources.
- 7.15.19. Place flashback arrestors at O₂, acetylene/other fuel type cylinder regulators.
- 7.15.20. Properly identify and label empty and full cylinders.
- 7.15.21. All power-driven tools, equipment and heavy equipment shall be inspected before use.
- 7.15.22. Every part of electric generators, turbines, motor or rotary converter, fly wheels or transmission machinery shall be securely guarded and fenced unless they are safe by position or construction.
- 7.15.23. Crane operation activity should be supervised by experienced, trained and authorized Crane Rigger against approved Permit to Work.
- 7.15.24. Crane lifts shall not be allowed at wind speeds above 32 km/h (20 mph-17.4/ knots-9 meters/second).
- 7.15.25. Crane Lift Plan should be prepared by experienced, trained and authorized Crane Rigger.
- 7.15.26. Any crane, working near energized power-lines, a designated signal-man shall ensure the following minimum distances are maintained:

Line Voltage	Minimum Safe Distance
Up to 50 Kilovolts (KV)	3 Meter (10 Feet)
50 to 250 Kilovolts (KV)	6.1 Meter (20 Feet)
Over 250 Kilovolts (KV)	7.6 Meter (25 Feet)

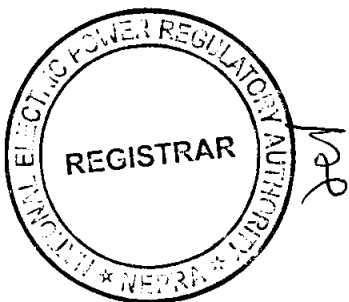
Note: Distances listed are for standard conditions, extra care must be taken, if standard conditions do not exist.





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- 7.15.27. Use non-conductive insulated measuring stick to verify clearance distances.
- 7.15.28. All lifting equipment shall have a certified safe working load (SWL) and be inspected prior to the lift. The SWL shall not be exceeded during the lifting operations and equipment that is damaged shall not be used.
- 7.15.29. Crane operator shall possess a government license, valid for the type and size of the crane being operated and shall be certified and trained for the equipment he/she operate.
- 7.15.30. Crane Rigger shall ensure that no one shall be under a suspended load.
- 7.15.31. All electrical equipment and portable lighting including flashlights shall be inspected.
- 7.15.32. Use proper wiring within conduit along with Ground-Fault Circuit Interrupters (GFCIs) in wet areas to prevent shocks at construction sites or while using portable electrical tools, etc.
- 7.15.33. The confined space shall be provided with illumination of not less than 50 lux. The contractor can increase numbers of lights to get enough lux level. Where flammable or potentially explosive atmospheres are likely, extra low voltage lighting (typically less than 25 Volt) shall be used.
- 7.15.34. Visitor access should be controlled.
- 7.15.35. Day and Night shifts representatives shall ensure proper hand over, information of all on-going critical activities/ issues in writing and verbally to avoid any confusion.
- 7.15.36. Permit to Work system shall be followed for all activities.
- 7.15.37. Barricading and warning signs shall be provided, when required.
- 7.15.38. Fire protection system shall be provided, inspected and maintained.
- 7.15.39. Full Body Harness with front work positioning belt along with double lanyard for 100% tie shall be used at height more than 6 feet/1.8 meter above the ground when climbing poles, towers and structures including working through mobile elevated aerial platform, man-baskets, man-lift or bucket mounted vehicles. Full Body Harness with front work positioning belt is to allow an employee to be supported on an elevated vertical surface such as a wall or pole and to work with both hands free. Use of a body belt alone for fall arrest is prohibited. Full Body Harness with PVC coated hardware should be used when working in explosive or electrically conductive environment. Anchor the safety harness lanyard on rigged anchorage point at height,





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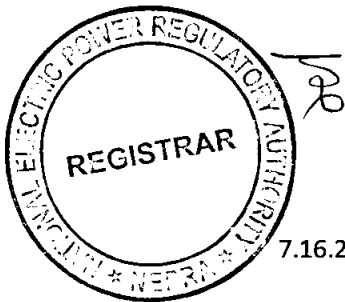
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having fall clearance safety factor three (03) feet from impact level or ground level.

- 7.15.40. Use self-retractable lifelines (SRL) when working in elevated areas such as roof top.
- 7.15.41. PPE shall be in good condition. PPE should be inspected before use. Remove and dispose defective PPE from the job site.
- 7.15.42. Employee/ contractor should be familiar with the nearest manual call point (MCP), safety shower, fire extinguisher, nearest safe escape route and assembly point.
- 7.15.43. Employee/Contractor shall be familiar/ trained in incident reporting.
- 7.15.44. Housekeeping shall be conducted regularly.
- 7.15.45. HSE observations, unsafe conditions/ acts and violations shall be corrected immediately at site and necessary action shall be implemented for preventive action to avoid reoccurrence.

7.16 Asset Integrity Management

7.16.1. Licensee shall establish, implement and maintain Asset Integrity Management program for new and existing plants, equipment and apparatus for inspection and quality control applied during the construction and maintenance activities to ensure equipment, instruments, devices, and systems remain in good physical condition and to avoid degradation due to mechanically, chemically, biologically, excessive vibration or corrosion.



7.16.2. Inspection and quality control shall address scope, minimum requirements, types and intervals, essential for equipment, instruments, devices, and systems whose deterioration and failure may adversely affect overall efficiency, and to assure safety, reliability and integrity of the system with reliable and efficient safe operation.

7.16.3. Inspection and quality control parameters shall be addressed for water dam inspection including but not limited to headwater/tail water levels, pore pressure, uplift pressure, seepage/ leakage, land movement, and stress/ strain, etc.

7.16.4. The Preventive Maintenance Plans should be scheduled based on inspection outcomes for each critical system/ equipment to increase their availability by reducing downtime caused by failure.

7.16.5. Safety critical protection devices, instrumentation, interlocks, protection relays, breakers, controls, safety relief valves, F&G detection system, software and components that are the last lines of defense and whose failure will result in a



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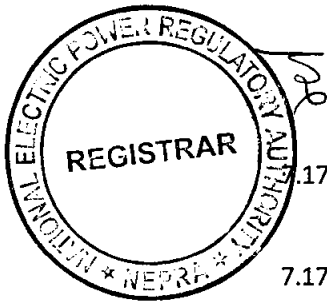
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significant incident shall be reviewed to identify and establish a list. A Management of Change (MOC) Committee/ team shall be established to review and approve any change, modification, addition or deletion of safety critical protection devices, instrumentation, interlocks, protection relays, breakers, controls, software, components and its list.

- 7.16.6. A document shall be developed that specifies the suitable procedures, testing of equipment, frequency of testing, acceptable limits and passing criteria of the tests of safety critical protection devices, instrumentation, interlocks, protection relays, breakers, controls, software and components.
- 7.16.7. Safety critical protection devices, instrumentation, interlocks, protection relays, breakers, controls, software and components shall be bypassed, isolated or taken out of service only for specified reasons such as repair and planned tests/ inspections, with formal documented approval for minimum possible time, and the work on these components shall continue uninterrupted till the system is back as normal on-line.

7.17 Management of Change

- 7.17.1. Licensee shall establish, implement and maintain a Management of Change (MOC) program to manage and control the permanent or temporary changes in plant or facility during design, construction and operation effectively through an established system.
- 7.17.2. MOC Committee/ team/ competent authority shall review and approve any change, modification, addition or deletion.
- 7.17.3. MOC program shall ensure that any change "Not In Kind" shall have safeguards in place to eliminate the possibility of hazards introduction as a result of changes to technology, operations, utilities, parameters, trips, set points, chemicals and plant equipment.



7.18 Traffic Management

- 7.18.1. Traffic Management Plan involves the safe access and movement of all vehicles (such as Cars, Pickups, Trucks, Tankers, Coaster and Buses), heavy equipment (such as Forklifts, Cranes) and Pedestrians within, through and around sites where work is carried out.
- 7.18.2. Licensee shall establish, implement and maintain Traffic Management Plan for vehicles operating within premises and outside, address authorized driver



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requirements, usage of company vehicles, safe routes including rest times and locations and implement a monitoring system that includes an incentive program for safe driving and a penalty and disciplinary actions for unsafe driving.

- 7.18.3. Licensee should employ only experienced, trained and authorized employees/contractors as drivers of motor vehicles. Licensee drivers shall have government driving license for the type of vehicles they are driving. All Licensee drivers are expected to drive in a defensive manner and maintain control of their vehicles at all times. All drivers must follow the posted speed limits and traffic signs. The driver shall wear seat belts at all times. Vehicles must be in good condition.
- 7.18.4. The Licensee driver is responsible for transporting materials properly and ensuring that the load does not exceed the manufacturer's design load capacity. All loads shall be properly secured and tied down. Materials should not extend over the sides of the truck. Loads extending beyond the front or rear shall be marked with a red flag.
- 7.18.5. Driver shall perform a 360 degree walk-around before getting into the vehicle or before reversing to check any obstruction, kids or manhole etc. at front or rear side.
- 7.18.6. Driver shall inspect the vehicle's safety equipment (e.g., spare tires, toolkit) before using the vehicle.
- 7.18.7. Driver shall maintain vehicle in a safe condition and maintain tire pressure as per the manufacturer's specifications.
- 7.18.8. All vehicles shall be parked correctly and/or in designated parking areas. Parked vehicles shall not obstruct other vehicles, roadways, access-ways or fire equipment.
- 7.18.9. Licensee driver shall report unsafe condition or motor vehicle accident, no matter how slight, immediately to his supervisor/ in-charge.
- 7.18.10. Licensee Traffic Management Plan should also address following:
 - a. Pedestrian Routes,
 - b. Traffic Routes,
 - c. Traffic Movement,
 - d. Bicycle/ Tricycle Movement,
 - e. Interaction or potential interaction between pedestrians and vehicles,
 - f. Parking requirements,





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- g. Bus arrivals or departures,
- h. Vehicles reversing and maneuvering,
- i. Maintenance activities and movements,
- j. Loading/ Unloading,
- k. Traffic existing control and the type of additional controls required,
- l. Site requirements for special vehicles such as crane (over-dimensional vehicles),
- m. Hitching or unhitching of Trailers/ Tankers,
- n. Mounting or dismounting of refuse container from vehicles,
- o. Safe access to site Fire & Safety Equipment,
- p. Maximum driving hours and rest time,
- q. Safest routes for the journey outside the facility,
- r. Emergency Support Services access.

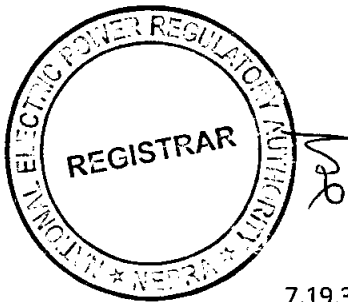
7.19 Task Risk Assessment/ Job Safety Analysis

7.19.1. A job plan or method statement shall be developed, agreed by site In-charge, permit to work issuer and receiver by considering to identify all known hazards, eliminates the hazards where practical, controls the hazards that cannot be eliminated, protects against injury if a hazard gets out of control, minimizes the severity of an injury if one takes place and identifies each worker's responsibilities.

7.19.2. Licensee should apply Task Risk Assessment (TRA)/ Job Safety Analysis (JSA) or Job Hazard Analysis (JHA) as per job plan or method statement to all activities that are not covered by a standard operating procedure such as projects, modifications, repairs & maintenance, testing, inspection and turnaround in the existing operational facilities. The TRA/JSA is a systematic approach to identify and analyze potential hazards in performing a specific maintenance job/ work activity to eliminate or reduce these hazards and the risk of a workplace injury or illness.

7.19.3. Typical examples of the jobs requiring TRA/JSA are:

- Confined Space Entry
- Cutting or Welding
- High risk activities involving crane lifts such as use of crane suspended man





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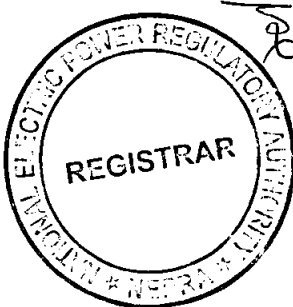
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baskets, tandem lifts, night-time lifts, limited access situations, near overhead power lines, etc.

- High risk material handling such as heavy product containers.
- Activities on pressure vessels, piping, or equipment that could not be depressurized.
- Activities involving use of new and/or potentially hazardous equipment, such as grit blasting, chemical cleaning, and high-pressure hydro-jetting.
- Activities where a person is required to use any fall arrest system, safety harness/ safety net.
- Activities involving multi-disciplinary groups on the same apparatus/ equipment or location.
- Simultaneous project works in the plants.
- Work involving electrical equipment and testing activities (repair, maintenance, troubleshooting or testing on electrical circuits, components, or systems, switching devices such as circuit breakers etc.).

7.19.4. TRA/JSA shall be conducted for:

- Tasks where the hazards and control measures need to be formally assessed.
- Tasks that have the potential for a serious incident.
- Tasks that have a history of incidents or near misses.
- Tasks that are not covered by a standard operating procedure or work instruction.
- Non-Routine Tasks or tasks that are being carried out in unusual or new circumstances.
- Tasks that are relatively complex.



7.20 Personal Protective Equipment

- 7.20.1. Personal Protective Equipment (PPE)/ Tools & Plants (T&P) shall be in accordance to Hazard/ Risk Category and/or PPE/T&P Assessment study to provide protection from hazardous conditions.
- 7.20.2. Maintain list of approved Stock and Non-Stock Safety items including PPE/ T&P with material description and model number.

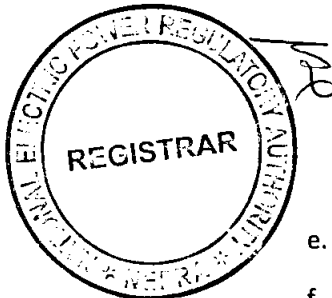
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- 7.20.3. Maintain adequate amount of PPE/ T&P inventory at each site. Conduct visual inspection of PPE/ T&P before each use.
- 7.20.4. Identify task specific PPE/ T&P in Task Risk Assessment/ JSA/ Permit to Work.
- 7.20.5. PPE/ T&P shall be stored and maintained in a safe working condition after completion of work.
- 7.20.6. PPE/ T&P should include one or more of the following:
- Insulated electrical tools.
 - Non-conductive shoes, safety boots, or overshoes for wet service.
 - Non-conductive Helmet for Head Protection with strap when working at height above 1.8 meter/confined space. Fully dielectric, no metal parts, non-vented, helmet material polyethylene/ polycarbonate, other plastic materials stabilized against degradation from ultraviolet radiation, 6 or 4 point suspension, adjustable type, helmet intended to reduce the danger of exposure to high voltage electrical conductors.
 - Insulated Electrical Rubber Hand Gloves and Sleeves, Class 00 (Maximum AC 500V/DC 750V), 0 (Maximum AC 1000V/DC 1500V), 1 (Maximum AC 7500V/DC 11250V), 2 (Maximum AC 17000V/DC 25500V), 3 (Maximum AC 26500V/DC 39750V), 4 (Maximum AC 36000V/DC 54000V) for involved working voltage. Leather gloves shall be worn over insulated rubber gloves to provide the required mechanical protection. The gloves shall not be used when damp.
 - Flame Resistance Clothing Uniform.
 - Arc Flash Kit for Arc Flash Protection such as Category 4 Arc Flash Resistant Suite, Arc Flash Hood Arc-rated Gloves and Arc-rated Fall Protection while working on high voltages (more than 420 V).
 - Eye protection with non-conductive frames.
 - Full Face Shield (polycarbonate or similar non-melting type) while working in batteries/ handling chemicals.
 - Hearing Protection (Noise more than 85dBA).
 - Full Body Harness with front work positioning belt (positioning lanyard) along with double lanyard for 100% tie shall be used at height more than 6 feet/1.8 meter above the ground when climbing poles, towers and structures including





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working through mobile elevated aerial platform, man-baskets, man-lift or bucket mounted vehicles. Full Body Harness with front work positioning belt is to allow an employee to be supported on an elevated vertical surface such as a wall or pole and to work with both hands free. Use of a body belt alone for fall arrest is prohibited. Full Body Harness with PVC coated hardware should be used when working in explosive or electrically conductive environment. Anchor the safety harness lanyard on rigged anchorage point at height, having fall clearance safety factor three (03) feet from impact level or ground level.

- k. Suspension Trauma Strap especially for work at height for long hours, in case of emergency the worker can stand on his feet on it to prevent trauma till he is rescued.
- l. Use self-retractable lifelines (SRL) when working in elevated areas such as roof top.
- m. Portable rubber insulated floor mat or insulated working support/ blanket or rubber plate or any other non-conductive object such as plywood.
- n. Voltage Detector
- o. Insulated Hot Sticks for voltage measurement, operation of disconnection or cutouts, and application of grounding/ earthing, etc.
- p. Other task specific PPE could be, grounding/ bonding set, air supplied helmet for chemical sprays or grit blasting, PVC Shoes, life line, portable gas detector, particulate masks, half or full face Respirator (cartridge masks as per MSDS, SCBA, supplied air breathing Apparatus), Bunker Gear, Ear Plugs/Muffs, Rain Coat, PVC Disposable Coverall, Rubber/PVC Apron, fire blanket, Face Shield, Safety Goggle, Welder's Shield, well-fitted gloves (Cut Resistance, Pinch Resistance, Heat Resistance, Cryogenic, Welder Gloves, Electrical Gloves, Chemical Gloves as per MSDS, Rubber or Plastic acid-resistant chemical gloves with elbow-length gauntlet), portable eye wash, Non-Sparking Tools, flame-proof light, explosion proof low voltage (24v) lighting, Aluminized suit for pyrophoric chemical handling, Long boots, Warning Tapes/ Cones, Warning Sign, non-conductive measuring tape/ stick and ruler, Reflective Vest for worker visibility, Lifejacket, etc.



- 7.20.7. Don't wear gloves/ loose clothes around moving machinery such as drill presses, mills, lathe, grinder, etc.
- 7.20.8. Workers should be trained in the adequate use of these PPE.
- 7.20.9. The Licensee should establish clear instructions on when and where these PPE should be used and communicate these effectively to all relevant workers on its facilities.



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7.21 De-Energized Circuits and Apparatus

- 7.21.1. Only electrically experienced, trained and authorized employees/ contractors shall perform electrical work against approved Permit to Work.
- 7.21.2. Install and maintain earthing/grounding system (i.e., equipment, exposed steel structure/ pole along with stay wire).
- 7.21.3. Earthing/grounding resistance shall be as per design or manufacturer's instruction. In the absence of grounding instruction, the earthing resistance for HT/LT structures/ poles shall be not more than 5 Ohms and Distribution transformer shall be not more than 2.5 Ohms to determine the integrity of the grounding path to ensure protection from shock hazards. The earthing resistance for Grid Station/ Substation/ switchyard equipment shall be not more than 2 Ohms.
- 7.21.4. Verify integrity of fixed earthing/ grounding by continuity test and resistance measurement. In general, this cycle can range from 6 months to 3 years, depending on conditions and criticality. Wet locations testing should be 12 months and critical care shall be 6 months. Provide name plate/ tag to all structures/ poles/ equipment's with numbers for tracking of earthing/ grounding testing record, etc. Original record of testing with structures/ poles/ equipment's numbers shall be retained and preserved by licensee for three (03) years.
- 7.21.5. Before working on circuits and apparatus, identify task specific PPE/T&P in Permit to Work.
- 7.21.6. Insulated stick/ rod, tools and PPE/T&P shall be used for applying and removing the earthing connection to lines or equipment.
- 7.21.7. Maintain an appropriate minimum distance from energized power lines at all times, while working nearby:



Line Voltage	Minimum Safe Distance
Up to 50 Kilovolts (KV)	3 Meter (10 Feet)
50 to 250 Kilovolts (KV)	6.1 Meter (20 Feet)
Over 250 Kilovolts (KV)	7.6 Meter (25 Feet)

Note: Distances listed are for standard conditions, extra care must be taken, if standard conditions do not exist.

- 7.21.8. Use non-conductive insulated measuring stick to verify clearance distances.
- 7.21.9. When it may not be possible to maintain the appropriate minimum distance between

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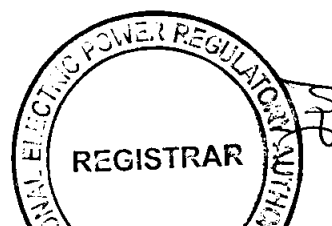
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power lines and equipment, it shall be requested to de-energized lines and equipment.

- 7.21.10. When working on the lines, de-energize the lines, test all phases by beeper/ voltage detector and provide grounding set of same voltage level.
- 7.21.11. When circuits and apparatus are de-energized for work, they shall be grounded with grounding equipment on all sides of the location where the work is to be done, regardless of whether or not there is more than one source of supply.
- 7.21.12. Before the grounding clamps are applied, check to determine that the circuit or apparatus has been de-energized, also check health of the grounding cable.
- 7.21.13. The earth wires shall be connected to the temporary earthing rod, and should be placed preferably 6 meters away from the point of work, inside the barricaded area, where no one is present or able to touch it.
- 7.21.14. When working on the earthing lines or equipment by use of Portable Temporary Grounds (PTG) kit, first connect to temporary earthing rod and then to lines or equipment, while for removing Portable Temporary Grounds (PTG), first remove from lines or equipment and then from the temporary earthing rod.
- 7.21.15. Grounding cable shall be capable to conduct the same voltage level as the protective device supplying the conductor.
- 7.21.16. The licensee shall implement and document a system to verify that all established requirements in this paragraph are met. If it is observed that deviations and/or violations are present, the licensee shall determine and implement adequate actions to prevent and rectify these deviations and/or violations.

7.22 Working on Energized Conductors and Apparatus

- 7.22.1. Only electrically experienced, trained and authorized employees/ contractors shall perform electrical work against approved "Permit to Work" under the continuous direction and supervision of the job in-charge.
- 7.22.2. Work on or handling of any energized electrical conductor, bus bar, etc. shall not be permitted without an approved insulated tool, instrument or handle unless one of the following conditions is met:
 - a. The employee is insulated or guarded from the energized part. (Insulated gloves with sleeves rated for the voltage involved shall be considered for insulation of the employee from the energized part.) Don't only wear leather (non-insulated)





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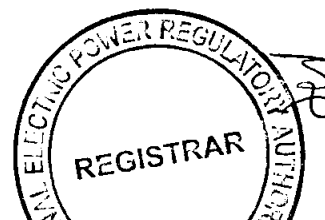
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gloves when working on energized lines. Insulating sleeves shall be worn with insulating gloves in case exposing the employee elbow and upper arm to contact with other energized parts.

- b. The energized part is insulated or guarded from the employee by portable rubber insulated mats or insulated working support/ blanket or any other non-conductive object such as plywood barriers that prevent accidental contact.
- 7.22.3. The hazard of falling/ touching of tools on live circuits/ breakers shall be understood by all concerned and appropriate precautions shall be taken.
 - 7.22.4. If work is to be done on energized electrical conductor, bus bar, etc., effective supervision of site senior in-charge shall be ensured.
 - 7.22.5. Identify task specific PPE/ T&P in Permit to Work especially Category 4 Arc flash resistant suite, Arc flash hood, Arc-rated gloves and Arc-rated Fall Protection while working on high voltages (more than 420 V).
 - 7.22.6. Hazards and appropriate protection for work on live circuits shall be effectively communicated to all concerned involved in the job.
 - 7.22.7. The licensee shall implement and document a system to verify that all established requirements in this paragraph are met. If it is observed that deviations and/or violations are present, the licensee shall determine and implement adequate actions to prevent and rectify these deviations and/or violations.

7.23 Safe Practices for Transformer and Capacitor Installations

- 7.23.1. Only electrically experienced, trained and authorized employees/ contractors shall perform electrical work near energized equipment against approved Permit to Work.
- 7.23.2. Whenever physical protection is required because of close proximity, electrician's rubber protective equipment should be utilized to cover exposed electrical terminals such as transformer bushings, fuse cutouts, buses, etc. An alternate approach is to install portable rubber insulated mats or insulated working support/ blanket or any other non-conductive object such as plywood barriers that prevent accidental contact.
- 7.23.3. Work on Energized Transformer:
 - a. Every possible attempt shall be exercised to avoid working on energized equipment.





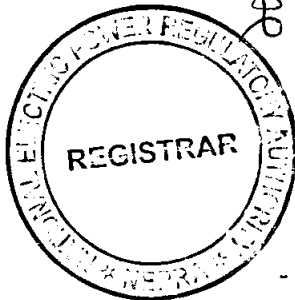
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- b. Job Safety Analysis shall be carried out before carrying out the job.
- c. Appropriate personnel protective equipment to be used for the work.
- d. When replacing fuses on the high voltage side of transformer, all possible secondary load shall be removed.
- e. Insulating tongs, similar to insulated switch sticks shall be used to remove and install fuses.
- f. Fuse cut-outs shall be opened or closed in a sure, positive manner by an experienced, trained and authorized employees/ contractors.

7.23.4. Work on De-Energized Transformer:

- a. Dry Type Transformer.
 - Job Safety Analysis shall be carried out before carrying out the job.
 - Power transformer shall be de-energized, isolated and grounded.
- b. Liquid-Immersed Transformer.
 - Insulating oil shall be handled and stored where it will not be exposed to temperatures approaching the ignition point.
 - Static charges can be developed when transformer oil flows in pipes, hoses, and tanks. Oil leaving a filter press may be charged to over 50,000 volts. Filter press, metal hoses, and tanks shall be grounded during oil flow into any tank to accelerate dissipation of the charge in the oil.



All windings of a de-energized transformer that is having its oil circulated through a filter press or similar equipment shall be grounded for at least an hour after the oil flow has been completed.

- After any oil filtration work, the accumulated air on the transformer shall be released by opening the Buchholz relay vent after the transformer is cooled down.
- Terminals shall not be touched before they are adequately grounded.
- When any quantity of oil is added to a transformer it should remain de-energized for a period of at least 8 hours after filling is complete except while topping up transformer already filled with oil up to conservator or if the unit is filled under vacuum the time period can be shortened to 1 hour, and when



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small quantities of oil are added in such a way as to eliminate the formation of air bubbles.

- Precautions shall be taken to avoid developing static charges from oil flow in pipes, hoses, and tanks.
- Transformer should not be energized until oil cools down to ambient temperature after oil circulation/ filtration.

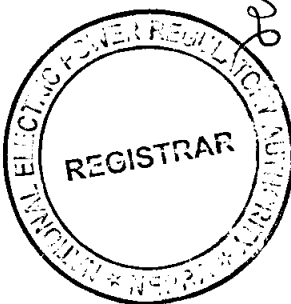
7.24 Electrical and Mechanical Isolation

7.24.1. Licensee shall ensure the electrical and mechanical isolation before any employee/ contractor performs any servicing or maintenance on machinery or equipment or any electrical apparatus, where the unexpected energizing, start up or release of any type of energy (electrical, kinetic, potential, thermal, chemical) could occur, cause damage to equipment, injury to personnel and/or environment can be adversely impacted.

7.24.2. All electrical circuit conductors and circuit parts shall be considered energized until the source(s) of energy is (are) removed, electrical energy discharged and de-energized through a mechanically secure connection to an effective ground potential. Electrical conductors and circuit parts that have been disconnected, but not under isolation, tested and grounded (where appropriate) shall not be considered to be in an electrically safe work condition, and safe work practices appropriate for the circuit voltage and energy level shall be used. Isolation requirements shall apply to fixed, permanently installed equipment, temporarily installed equipment and portable equipment.

7.24.3. In situation where it is not possible to lockout or chain off an isolating device, isolation may be accomplished by removal of fuses, disconnection of electrical cables, or physical removal of component of the system supplying energy to the equipment. The point of physical interruption should be identified with installation and securely fastening of "Danger Card/ Tag – Do Not Operate or Remove Tag" with purpose/ reason of installation, date and time of installation, isolating location/ equipment, Card/ Tag installer name, his badge number, contact number and signature. No individual shall attempt to remove Danger Card/ Tag except installer, after verification when it is safe to do so.

7.24.4. Up-to-date drawings shall be considered a primary reference source for isolation location. When up-to-date drawings are not available, the company shall be responsible for ensuring that an equally effective means of locating all sources of





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energy is employed.

- 7.24.5. All personnel who are required to actually do the electrical isolation shall wear proper PPE to ensure safe switching Off & On and applying isolation.
- 7.24.6. No individual shall attempt to start, energize, use, or operate a piece of equipment that has been isolated. The licensee shall implement lockout/ tagout (LOTO) systems to prevent any accidental energizing of equipment.
- 7.24.7. Isolation is completed only when no associated control device, such as a push button, control interlock or automatic start-up control circuit, shall have the capability of energizing equipment.
- 7.24.8. Verification test shall be conducted on each isolating device and on each piece of equipment isolated.
- 7.24.9. Sometimes de-energized circuits may become energized because of the following reasons:
- Switching errors,
 - Unusual conditions which may bring an energized conductor into electrical contact with the de-energized circuit,
 - Back feeding of current from any generating source i.e. Generator or UPS,
 - Lightning strikes (All work on or near apparatus where a lightning strike may cause personal injury should be suspended immediately),
 - Stored charges from capacitors, cables, transformers, motors, and generators.
- 7.24.10. Mechanical isolation of Vessels & Pipes can be achieved by any of the following:
- Valve closure with use of blinds at Inlet and Outlet.
 - Removal of pipe spool with the use of blind flange.
 - Double block & bleed with use of blind.
 - Removal of mechanical couplings.
- 7.24.11. The blind shall be of the manufacturer recommended thickness and material.
- 7.24.12. The blind rating must be equal to the pressure setting of the pressure relief valve protecting the line or equipment.
- 7.24.13. If there is no pressure relief valve, then the rating must be equal to lowest rated



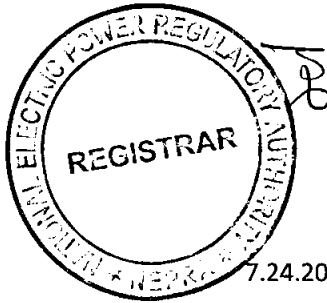


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equipment in the system (most likely pipe flange).

- 7.24.14. Each blind must have a handle that can be easily identified.
- 7.24.15. Prior to blind installation, the following documents need to be prepared:
- Blind list and the blind register.
 - Marked Process and Instrument Drawing (P&ID) reflecting numbered locations of blinds.
- 7.24.16. Operation staff is responsible for identifying physical locations of blinds.
- 7.24.17. Permit to Work issuer and receiver shall cross check between the Process and Instrument Drawing (P&ID), blind list and the blind register before installation of blinds.
- 7.24.18. Licensee shall establish and maintain systems to prevent the accidental removal of safety systems that would lead to unsafe situations. These systems include the implementation of lock out/ tag out (LOTO) systems.
- 7.24.19. When the job or task is completed, appropriate tests and visual inspections shall be conducted before electric circuits or equipment are re-energized to verify that all tools, mechanical restraints and electrical jumpers, short circuits, and temporary protective grounding equipment have been removed, so that the circuits and equipment are in a condition to be safely energized. All workers involved in these activities shall acknowledge that they have completed their work and understand that the system will be energized.
- 7.24.20. Operation staff shall physically verify the removal of blinds in field and update the blind register accordingly.



7.25 Permit to Work

- 7.25.1. Licensee shall apply Permit to Work System and the work shall be carried out only when there is a valid permit to work issued for corrective and preventive maintenance activities, etc.
- 7.25.2. The Permit to Work System shall be applied when;
- a. The hazards associated with the activities can result in immediate danger to life or health (i.e., lost time injury, disability or death) of personnel involved in work and/or other personnel in or around the facility.
 - b. Damage to company assets or property i.e., physical damage, fire/explosion

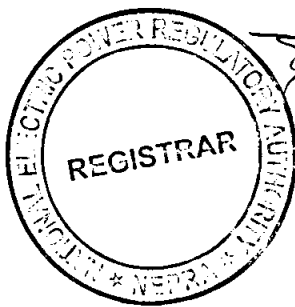


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damage, loss.

- c. Significant impact on the environment by way of toxic release, or pollution, etc.
- d. Permit to Work shall be applied for all critical activities such as but not limited to; welding, cutting, grinding, maintenance and repair electrical apparatus, de-energized/ energized activities, hydro-jetting, lifting, work at elevated areas, confined space entry, excavation and any other activity as defined by licensee.
- e. Permit to Work shall be issued and received only by trained and authorized Permit to Work Issuer & Receiver. Licensee shall establish specific training requirements for these functions as well as maintain a list of staff who is authorized to act as a permit to work issuer or receiver.
- f. Permit to Work shall cover all hazards, PPE/T&P requirements, Exact Work Location, Apparatus/ equipment number, Job/ Work Order Number, Work Description, Joint site inspection by Issuer & Receiver, Isolation/ Lockout/ Tagout application, Barricade at job site, job briefing with all involved person including discussion of any job-related hazards. A Permit to work is only valid for the time and date as specified on the permit.
- g. All internal and external affected parties shall be informed in writing or get counter signature on permit to work for necessary precautions before issuing permit to work.
- h. Permit to Work Receiver shall obtained a copy of the Permit to Work and shall keep it at the work site.
- i. Permit to Work Receiver shall remain at work site continuously when the job activities are in progress to adequately supervise the work till completion of the work, however, if Receiver must leave the job site for any reason, for example to obtain additional tools or equipment, tea/ lunch/ washroom break, etc., then an another Receiver that is certified and authorized can be delegated to carry out the responsibilities of the Receiver during the remaining part of the job or the job shall be stopped till break time and all workers shall be out of designated job site/barricaded area. The delegated Receiver shall write his badge number and sign the Permit to Work.
- j. When job is complete, housekeeping shall be conducted, all tools, waste shall be removed and staff members withdrawn before removal of temporary earth connections, removal of Isolation and LOTO.





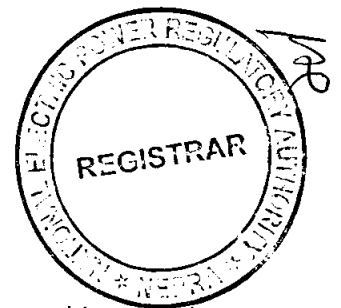
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- k. Energizing and operation shall be carried out after verification by Issuer & Receiver at the time of Permit to Work closure.

7.26 Tools, Portable Power Tools and Heavy Equipment

- 7.26.1. All heavy equipment, machinery, power driven tools and other hand-held portable equipment shall be periodically inspected and frequency shall be clearly defined as per manufacturer's recommendation. An inspection tag shall be pasted on each heavy equipment, machinery, power driven tools and other hand-held portable equipment. Instrument/ equipment which is regularly calibrated and a calibration certificate is available, shall be considered as inspected.
- 7.26.2. All equipment inspection tags for validity shall be checked at main gate prior to entering the facility. No equipment shall be permitted for use without inspection tag within the facility.
- 7.26.3. Employee/ Contractor who use tools must be properly trained and authorized to use, adjust, store and maintain tools properly. Electrical hand tools shall be properly grounded or be of the double insulated type. All tools shall be free from defects and maintained in good condition.
- 7.26.4. The number of accidents involving the use of tools can be reduced by following basic safety principles:
- Keep all tools in good condition with regular maintenance.
 - Calibration of testing equipment shall be arranged on time as per manufacturer's manual.
 - Use the right tool for the job.
 - Inspect each tool for damage before use.
 - Operate according to the manufacturer's instructions.
 - Provide and use the proper protective equipment (PPE).
 - Safety guards and face shield shall be used while operating power-driven rotating tools.
- 7.26.5. Examples of Non-Powered Hand Tools; Hand tool is any tool that is powered by hand, rather than a motor. Categories of hand tools include wrenches, pliers, cutters, striking tools, struck or hammered tools, screwdrivers, vises, clamps, snips, saws, drills and knives. Portable power tools are not hand tools.





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- 7.26.6. Pliers, wrenches, etc., whether insulated or not, shall not be used without rubber gloves while working near live parts.
- 7.26.7. A Power-driven tool is a tool powered by an electric, hydraulic, or pneumatic power or by an internal combustion engine such as grinder/ grinding machine, disc cutter, electric drilling machine, welding machine, hydro-jetting machine, bench grinding machine, air compressor, cutting machine, blowers, sand/ grid blasting machine, jack hammer, hydraulic jacks, and battery-operated drill machine, etc.
- 7.26.8. Examples of heavy equipment are; heavy lifting, elevating, and mobile equipment, bulldozers, skid mounted support equipment, excavators, cranes (all types), tractor-scrappers, riggers, graders, below the hook lifting devices, wheel loaders, wheel dozer (soil compactor), forklift, backhoes, personnel platforms/ man-baskets/ man lift/ bucket mounted vehicles, elevating equipment, aerial platforms, side boom tractors, overhead hoists, etc. including insulated aerial bucket, that successfully passed dielectric testing of the insulated portion of the boom and bucked.
- 7.26.9. All Heavy Equipment drivers/ operators shall possess a government license, valid for the type and size of the Heavy Equipment being operated.
- 7.26.10. When mobile plant or heavy equipment is working near a live/ energized power line, following minimum distance shall be maintained:

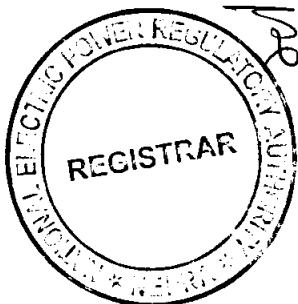
Line Voltage	Minimum Safe Distance
Up to 50 Kilovolts (KV)	3 Meter (10 Feet)
50 to 250 Kilovolts (KV)	6.1 Meter (20 Feet)
Over 250 Kilovolts (KV)	7.6 Meter (25 Feet)

Note: Distances listed are for standard conditions, extra care must be taken, if standard conditions do not exist.

- 7.26.11. Use non-conductive insulated measuring stick to verify clearance distances.

7.27 Scaffolding

- 7.27.1. Licensee shall ensure minimum safety requirements for the erection, inspection, working and dismantling of scaffolding structure at site against approved Permit to Work.
- 7.27.2. Scaffolds shall be designed and constructed according to Good International Industry Practices. As a minimum a scaffold shall be equipped with safe access to all working floors, work floors that are covering the whole accessible area and are free of





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openings; protection to all sides where a fall hazard of more than 6 feet exists by a top-rail and a mid-rail.

- 7.27.3. All scaffold materials shall be inspected prior to use. Damaged material shall be removed from site.
- 7.27.4. Scaffolds shall be constructed by qualified scaffolders, who are trained in the right work methods as well as familiar with working at height requirements. Scaffolders will always be provided with fall protection with double lanyards when working at levels higher as 6 feet above the ground. They shall follow the 100% tie off rule.
- 7.27.5. Prior to the use of a scaffold, the scaffold shall be inspected by a qualified scaffold inspector. The inspection result shall be clearly marked at the entrance of the scaffold. Only qualified scaffolders are allowed on a scaffold that is not inspected or where the inspection results show the scaffold is not safe to use.
- 7.27.6. At least once every two weeks a scaffold will be re-inspected to verify it is still safe.
- 7.27.7. All scaffolds that are not inspected, show visible damage, are modified or have other safety concerns shall be closed-off for general workers until hazards have been rectified by scaffolders and the scaffold has been inspected.
- 7.27.8. The scaffold shall be protected from electrical hazards. Electrical conductors shall be de-energized and electrically grounded. Scaffold and platform shall not be less than 10 feet (Minimum Safe Distance) from energized electrical conductors, even greater distances are required at very high voltages.

7.28 Ladders

- 7.28.1. Licensee shall ensure the inspection of all ladders before use and remove defective ladders. Ladder shall be properly secured at the top and provide stable footing while being used. Ensure ladders extend a minimum of 1 m (3 ft.) above the top landing point. In general, set ladders at a 4:1 slope. When climbing up or down any ladder, face the ladder and maintain three points of contact with hands free of materials. Metal ladder shall not be used when working on or near electrical equipment or conductors; use only non-conductive ladders.
- 7.28.2. All poles, towers and structure shall be carefully inspected before climbing to assure that they are in a safe condition for the work to be performed and that they are capable of sustaining the additional or unbalanced stresses to which they will be subjected. The types of abnormalities that should be checked are cracks, damages,



Handwritten mark or signature.



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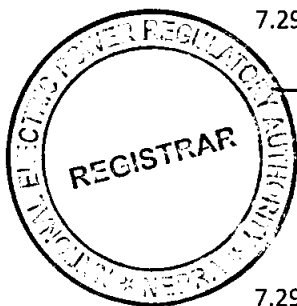
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and deteriorations in poles, towers and structure and its foundation.

- 7.28.3. If poles, towers and structure are unsafe for climbing, they shall not be climbed until made safe by guying, bracing or use mobile elevated aerial platform, man-baskets, man-lift or bucket mounted vehicle instead of ladder.

7.29 Excavations

- 7.29.1. Excavation shall be done against approved Permit to Work.
- 7.29.2. Licensee shall establish proper excavation techniques including sloping/shoring as per soil type to minimize the risk of the cave-in and damage to the underground services (Utilities). Piping and cable detector should be used. When underground piping or electrical installations are suspected, mechanical excavators shall not be used until all obstructions have been exposed by manual digging.
- 7.29.3. As-Built underground utilities drawings should be considered to identify electrical cables/pipes. Appropriate parties shall be notified to isolate identified utilities before beginning any excavation in the area.
- 7.29.4. If electrical live cable de-energization is not feasible, the suitable protection measures should be applied such as, providing a wooden box around the cable, providing protective sleeve for the cable, insulating personnel and equipment from possible electrical contact. Insulation of hand tools. Adopting test trenches excavation method by using hand tools to unveil underground pipes and electrical cables, etc.
- 7.29.5. Ensure proper communication done with local authorities for road closure. Where there is a likelihood of public, vehicles or equipment falling into an excavation, suitable barriers shall be erected including fencing of the excavation area, supervision, flag-men, traffic control and other measures required to ensure the safety of public at all times. Blinking warning lights should be used during dark to mark the limit of the work.
- 7.29.6. Restrict the movement of heavy machinery or vehicles in surrounding of excavated area, to avoid any collapse.



7.30 Welding and Cutting

- 7.30.1. Licensee shall ensure safety while performing welding and cutting work at site against approved Permit to Work.
- 7.30.2. Welding and cutting booth shall be covered with fire blanket to contain sparks during



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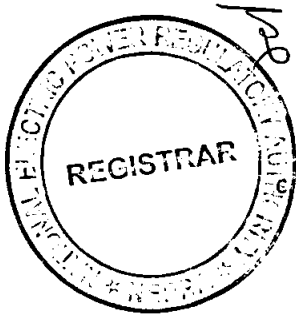
activity. Sufficient lighting to be provided once working at night.

- 7.30.3. Welding and cutting sparks shall not fall on gas cylinders, flammable materials or operating equipment.
- 7.30.4. Combustibles around the welding and cutting work area shall be removed.
- 7.30.5. Gas Testing shall be conducted as per Task Risk Assessment/ JSA/ Permit to Work at same elevation and above/ below elevation to test accumulation of explosive mixture.
- 7.30.6. Arrange trained Fire watch with adequate number of fire extinguishers.
- 7.30.7. Provide proper grounding during welding.
- 7.30.8. Use appropriate PPE for the job such as Welder Face shield, Mask, Leather Gloves and Welding Shade Number.

7.31 Hydro-jetting

7.31.1. Licensee shall consider following during hydro-jetting activity for equipment cleaning:

- a. All workers performing hydro-jetting job shall be trained and experienced for high pressure water jetting job and shall have the required certificate.
- b. Provide and use task specific PPE for hydro-jetting activity such as helmet with strap, face shield over mono-goggles, cut-resistant suit, respiratory protection (when require for confined space), gloves for hydro-jetting grip, metatarsal boots and hearing protection (Noise more than 85dBA). Use specialized ultra-high pressure PPE suit for Ultra High pressure (40K Psi) for hydro-jetting job.



c. There are two levels of high pressure washing, based on the water pressure used:

- High pressure water blasting from 5,000 to 30,000 psi
 - Ultra-high pressure jetting – greater than 30,000 psi
- d. Ensure proper working of Dead Man handle of the hydro-jetting equipment before start of work.
 - e. Before attempting to inspect or adjust any component of the hydro-jetting machine, the Foot-Control Valves (dump valves) must be not pressed.
 - f. The anti-withdrawal device must be used on all flex lances, rigid lances and line moling activities. The anti-withdrawal device must be securely attached to the

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equipment being cleaned.

- g. Make arrangement for saddle holder for smaller equipment hydro-jetting, to prevent wrong holding of hydro-jetting gun.
- h. Cover all sides completely by trampoline to avoid high pressure water jet escaping during hydro-jetting work.
- i. Hydro-jetting shall be done against approved Permit to Work.

7.32 Ionizing Radiation

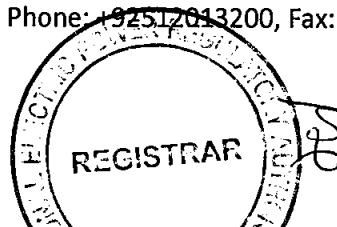
- 7.32.1. Licensee shall establish, implement and maintain a program to ensure safe use, handling, managing, processing, operation, storage, transport and monitoring of radioactive materials, equipment and its waste such as gamma rays, X-rays, alpha particles, and beta particles, or indirectly such as neutrons, used for industrial purpose in compliance with applicable national and provincial legal requirements to protect people and the environment from harmful effects of ionizing radiation. Licensee shall regularly monitor radiation workers, who are likely to receive an effective dose of radiation, for corrective and preventive actions.

7.33 Hazard Communication Program

- 7.33.1. Licensee shall establish, implement and maintain Hazard Communication Program to identify onsite available chemical inventory along-with its hazards detail as provided in Material Safety Data Sheet (MSDS), apply labeling and tracking system for all chemicals, manage required PPE for handling of hazardous chemicals and provide necessary awareness training to relevant employees and contractors. Material Safety Data Sheet (MSDS) shall be maintained for all hazardous chemicals and made readily available to all interested parties.

7.34 Polychlorinated Biphenyls (PCBs)

- 7.34.1. Polychlorinated biphenyls (PCBs) are highly toxic, non-conductive and non-combustible liquid used in some transformers and capacitors. It is hazardous to aquatic life and persist in the environment for long periods of time. They can accumulate in food chains and may produce harmful side effects. PCBs and PCB-containing equipment, transformer, oil and items shall not be introduced at Licensee facilities.
- 7.34.2. Licensee shall ensure all materials, oil and items introduced at site are certified PCB-free.





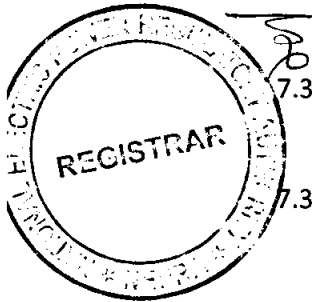
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- 7.34.3. Licensee shall consult Pakistan Environmental Protection Agency or Provincial Environmental Protection Agency for any suspected PCB materials.
- 7.34.4. In case no suitable PCB-free materials, oil or items are commercially available, a written approval/ waiver shall be obtained from Pakistan Environmental Protection Agency or Provincial Environmental Protection Agency for purchasing, handling, replacement and disposal purposes.
- 7.34.5. Existing stocks of PCBs and equipment containing PCBs shall be identified. These shall be marked and removed/ replaced as soon as feasible, as per aforementioned requirements.

7.35 Asbestos and asbestos-containing materials, equipment and items

- 7.35.1. Asbestos is a naturally occurring silicate mineral with long, thin fibers. Asbestos materials become hazardous when asbestos fibers become airborne, which happens when materials are damaged. Inhalation of asbestos fibers can cause significant health problems therefore Licensee shall ensure asbestos and asbestos-containing materials, equipment and items shall not be introduced into Licensee facilities.
- 7.35.2. Licensee shall ensure all materials and items purchased are asbestos free.
- 7.35.3. Available asbestos materials shall be identified and dispose properly when not required.
- 7.35.4. Licensee shall consult Pakistan Environmental Protection Agency or Provincial Environmental Protection Agency for any suspected asbestos materials and disposal.
- 7.35.5. In case no suitable asbestos free materials are commercially available, a written approval/waiver shall be obtained from Pakistan Environmental Protection Agency or Provincial Environmental Protection Agency for purchasing, handling, replacement and disposal.



7.36 Work Over or Adjacent to Water

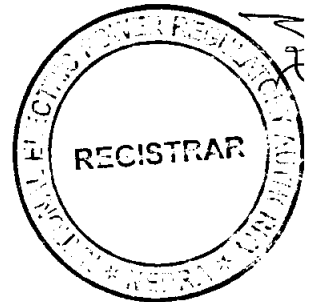
- 7.36.1. Licensee shall provide adequate lifesaving and rescue equipment at every workstation where work is being carried over or adjacent to water.
- 7.36.2. Life vests shall be worn by employee/ contractor when working over water. Full body harness with double lanyard for 100% tie all the times shall be used to avoid fall hazard.
- 7.36.3. The licensee shall ensure that people that have fallen in water can be easily and



swiftly be rescued and/or brought to the shore.

7.37 Adverse Weather

- 7.37.1. Licensee shall routinely monitor weather day and night at its operational areas and when inclement weather is expected, necessary corrective and preventive measures/precautions shall be implemented to ensure safe continual operations, avoid any incident to employee/ contractor, member of general public and loss of equipment/property.
- 7.37.2. Information regarding forecast of adverse weather shall be immediately reported to all interested parties in order to gain early warning of any forthcoming weather issues.
- 7.37.3. Adverse weather conditions include:
 - a. Heavy and continued sandstorm,
 - b. Strong winds,
 - c. Lightning and thunderstorms,
 - d. Extremely hot and humid weather,
 - e. Medium to heavy rainfall/snowfall,
 - f. Fog,
 - g. Floods.



7.38 Environmental Management System

- 7.38.1. Licensee shall establish, implement, monitor, and maintain environmental management system as per applicable legal requirements.
- 7.38.2. Waste Disposal System shall address safe handling, storage, transport and disposal of hazardous materials and waste (gaseous emissions, liquid effluent and solid waste) in accordance with currently accepted industry practices and applicable national and provincial legal requirements.
- 7.38.3. Licensee shall ensure the hazardous materials and waste are properly labeled. Separate areas shall be marked for storage of hazardous material and hazardous waste stored for disposal.
- 7.38.4. Segregation of combustible and non-combustible material to be done while dumping waste material.



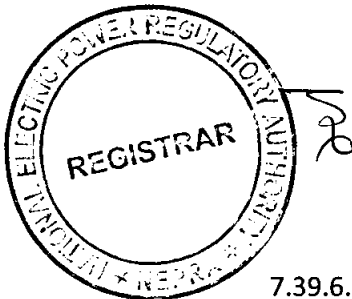
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- 7.38.5. Waste Disposal System shall address each type of waste (construction, chemical, sludge, ash, sanitary, medical, scrap and sewage) and shall also identify the steps to be taken, to treat the wastes or otherwise prevent them from polluting the ground water, sea or river, canal, or from becoming a public nuisance or hazard.
- 7.38.6. Licensee shall identify all waste water streams generated during his activities and their treatment, monitoring and disposal philosophy. The waste disposal contractor, disposal method and location shall be approved by local authorities and Environmental Protection Agency.

7.39 HSE Signs

- 7.39.1. Licensee shall develop, implement, install and maintain HSE Signs at all sites as required, for specific hazardous conditions, to warn employees, contractors, visitors and general public.
- 7.39.2. The fixed "Danger Sign" shall be installed at places where an immediate hazard/danger exists such as grids, substations, transformers, etc.
- 7.39.3. The fixed "Caution Sign" shall be installed at places where it is required to warn against potential hazards or to caution against unsafe practices.
- 7.39.4. Safety "Instructional Sign" shall be installed at places where permanent Safety requirement need to be installed such as HSE requirements or Personnel Protective Equipment required, etc.
- 7.39.5. Signs shall be placed as close to the area or equipment of coverage as possible and within buildings to assist personnel to escape. Signs shall be clear, easy to understand, consistent throughout the facility and placed for optimum visibility. Pictorial signs with consistent color codes are preferred. These "Signs" shall be understandable to employees/contractors/visitors and the sign words shall be in Urdu, English and/or in a language understood by locals and workers. The signs shall be readable at a minimum distance of 5 feet.
- 7.39.6. "Caution Tag" shall be used for temporary purpose for an existing hazard to avoid an incident, such as Do Not Operate Tag, Danger Tag and Caution Tag shall be developed and made available at each site. The tag shall have a hole on the top to run a thread that shall be used to tie the tag with the equipment. The tag and the thread should be made of weather resistant material. The installation and removal of tags is restricted to authorized employees/ contractors and they shall only install or remove. All Tags shall be dated and signed in the designated places prior to installation.

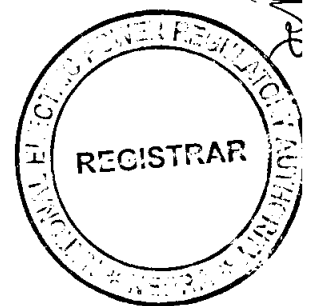




Special instructions covering operation of equipment is to be noted on "Caution Tag".

7.39.7. HSE Signs should cover the following, such as:

- a. Signs for clearances from electrical equipment and hazardous material.
- b. Signs for minimum horizontal and vertical clearance for overhead Low/High Tension lines from house/building.
- c. Signs for dangerous operation.
- d. Signs for high noise restricted areas.
- e. Signs for locations/ places.
- f. Signs for smoking areas.
- g. Signs for access/ egress/ exit.
- h. Signs for HSE instructions for employees/ contractors/ visitors.
- i. Signs for personal protective equipment and its location.
- j. Signs for useful knots.
- k. Signs for strengths and weight of material.
- l. Signs for safe working load of lifting equipment.
- m. Signs for safe working load of ropes.
- n. Signs for safe working of cranes.
- o. Signs for operation and maintenance Information.
- p. Signs for fire or emergency equipment and its location.
- q. Road/ Traffic signs.
- r. Signs for Pedestrians.
- s. Signs for allowable factor of scaffolding safety.
- t. Signs for Permit to Work (PTW) requirements.
- u. Signs for employees/ contractors/ visitor's motivation.
- v. Signs for Preventive Maintenance and Inspection schedules.
- w. Signs for conversion tables.
- x. Others required as per equipment manufacturer or engineering standards, etc.



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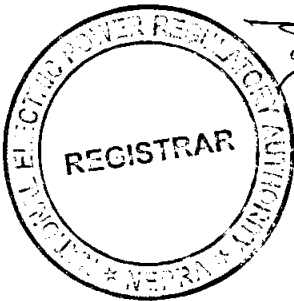


7.40 Housekeeping

7.40.1. Licensee shall maintain a reasonably good housekeeping throughout the site. Inappropriate housekeeping will increase chances of incidents and fires, etc.

7.40.2. As general guidelines:

- a. Stored materials secured and limited at the height to prevent fall. Don't store material/ files at the top of the cabinet, which is more than four (04) feet tall.
- b. Bookcases, filing cabinets, drawers, shelves, racks, storage cabinets and office materials should be organized properly and closed.
- c. Keep all official files in filing cabinet. Remove/ dispose-off, those files, papers, and materials regularly, which are not required.
- d. The workplace should be clean, layout orderly, properly arranged/ secured cables and no trips, falls or sharp edges.
- e. No electrical switches or receptacles cracked or broken.
- f. No frayed or damaged electrical cord or substandard extension cable is in use.
- g. Place all waste at designated places (bins or refused containers).
- h. Exit paths should be clear, unobstructed and properly lit for any emergency.
- i. Store PPE properly at designated clean places.
- j. Facilities/ equipment not in use should be frequently checked by area in-charge for any potential hazard.



7.41 Hygienic Facilities

7.41.1. Licensee shall provide hygienic facilities to protect employees/ contractor's health and the environment. Licensee shall provide an adequate supply of potable drinking water and well hygienic canteen, mess or cafeteria.

7.41.2. Licensee shall consider workplace ergonomics, illumination, ventilation, temperature, heat stress, noise, dust and fume in his hygiene plan.

7.41.3. Sufficient individually accessible toilet and handwashing facilities shall be provided for employees, contractors and visitors and kept clean and maintained in good working order.



7.42 Fire Prevention

- 7.42.1. Licensee shall provide and maintain adequate, easily accessible fire protection equipment on the job site. The Licensee should consult with the Civil Defense department for advice on selection of fire protection equipment. Licensee shall arrange and provide firefighting training to personnel to be familiar with fire protection equipment and its use.
- 7.42.2. Licensee shall establish, maintain and record monthly visual inspections of fire protection equipment for period of one fiscal year to check; if it is in correct location, whether access is unobstructed and clearly visible, to check equipment gauges, signs of leakage, corrosion or physical damage and check seals are unbroken and up to date inspection tag is fitted.
- 7.42.3. Licensee shall establish and maintain how to notify the concerned parties of the isolation or outage of Fixed Fire Protection systems, Fire Water Network, and Fire Detection and Alarm Systems. Licensee shall ensure the mitigation plan (control measures) is provided and implemented in case of isolation or outage of fire protection system.
- 7.42.4. Licensee shall take steps to prevent ignition of materials, lubricants, and fuels used at site.
- 7.42.5. Electrical equipment should be checked regularly for defects.
- 7.42.6. Smoking shall be permitted only in designated areas.
- 7.42.7. Welding equipment, heating appliances and other open flames or hot surfaces should be segregated from combustible materials.
- 7.42.8. Proper bonding and grounding techniques shall be used for any operation where static electricity could become an ignition source.
- 7.42.9. Gasoline and diesel-powered equipment should only be used in well-ventilated areas. Exhaust pipes should be kept away from combustible materials.

7.43 First-aid Facilities

- 7.43.1. Licensee shall provide a qualified paramedic nurse and an ambulance at site of construction, turnaround, rehabilitation, decommissioning, mothballing, and demolition to meet the emergency situation whenever work force exceeds fifty (50) persons.



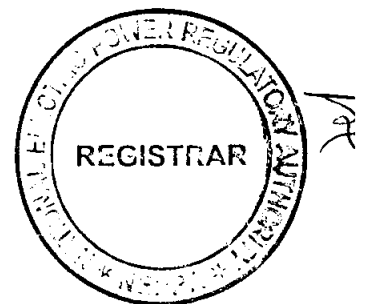
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- 7.43.2. First aid supplies shall be available nearby all work areas.
- 7.43.3. Licensee shall arrange First Aid training for selected employees/ contractors and arrange inspection and refilling of First Aid Kit on monthly basis during the first week of each month.
- 7.43.4. First Aid training should cover following aspects:
- Cardiopulmonary resuscitation (CPR).
 - Nose bleeding.
 - Physical/ Electric shock.
 - Sun/ Heat stroke.
 - Fainting/ Dizziness/ Food poisoning.
 - Fractures (broken bones).
 - Transportation/ shifting of the victims (to health facilities and nearby hospitals).
 - Wounds.
 - Splinters or foreign substances in the body.
 - Animal/ Snake bites.
 - Burns (thermal, electrical & chemical).
 - Eye injuries.
 - Sprains/ strains.
 - Bruises/ Allergies.
 - Frostbite.
 - Heimlich maneuver



7.44 Emergency Management System

- 7.44.1. Licensee shall establish, implement, and maintain an Emergency Management System to reduce losses caused by emergencies and to ensure that effective incident readiness and response plan are in place in order to limit and control the consequences of incident. This will be achieved by identifying, preventing, planning and training to respond to any event that could occur in Licensee facilities that requires the activation of emergency response. The Emergency Management System is applicable to incidents and emergencies that may take place within Licensee

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physical boundaries and operational area. The Emergency Management System should describe the mitigation, preparation, response and recovery of emergency scenarios, specific to Licensee operations, risks and uncontrolled significant aspects.

- 7.44.2. Licensee shall ensure that necessary emergency items are available at site.
- 7.44.3. Licensee shall provide, inspect and maintain in good working order adequate firefighting equipment. Designated employees/ contractors shall be properly trained in the use of firefighting equipment.
- 7.44.4. Licensee incident that is expected to extend beyond the perimeter fence of the facility and could likely affect the surrounding industries and community OR external incident such as gas leak, toxic liquid spill and potentially large fire that occurs outside the boundary of Licensee facility and could endanger the safety and health of Licensee employees/contractors or could cause damage to Licensee property OR an Incident escalated which cannot be managed by the available onsite resources and beyond the competency level of Licensee personnel, need immediate assistance from external Emergency Support Services.
- 7.44.5. Only trained employees/ contractors having appropriate PPE should respond to an incident. Emergency preparedness and response plan shall be followed. Others employees/ contractors shall follow the evacuation plan.
- 7.44.6. Employees/ contractors in the affected area shall stop the assigned job in a safe manner (conduct emergency shutdown/ isolation of operating equipment), if it is safe to do so as per SOP/ work instruction. They shall evacuate the affected area and proceed to the designated safe assembly point. All employees/ contractors after hearing emergency alarm should gather at the assembly point and wait for further instructions.
- 7.44.7. Assembly area should be at least 100 feet away from Operational Area, Building, Warehouse, Substation or Hazardous Area.
- 7.44.8. Windssocks should be provided at suitable locations in the plant to assist in a safe escape of personnel in case of an emergency.
- 7.44.9. Employees or contractor's employee shall stop and turn off their vehicle/ heavy equipment and park in a safe manner till the "All Clear" is announced. Don't block exit routes and routes for emergency responders.
- 7.44.10. Licensee shall ensure that a mock drill (announced/ unannounced) of the on-site



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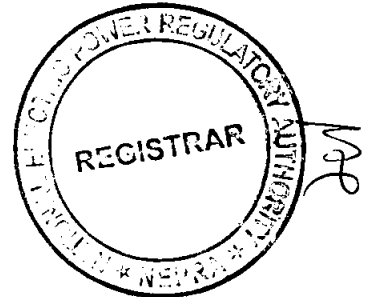


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Emergency Management System is conducted at least once every three (03) months.

- 7.44.11. Drill should be arranged in collaboration with local authorities.
- 7.44.12. The record of each drill shall be retained and preserved by licensee for period of one fiscal year.
- 7.44.13. The results of the drill should be evaluated and when needed used for improvement of the emergency preparations.
- 7.44.14. The following potential incident scenarios as applicable, but not limited to, should be considered in Emergency Management System:
- Incident Reporting,
 - Evacuation Plan,
 - Medical Incident,
 - Fire/ Explosion Incident (building, plants, cable, transformer yard, generating stations, coal handling/ conveyor system, etc.),
 - Spill/ Release Incident,
 - Collapse of lifting appliances and transport equipment,
 - Utility Failure Incident,
 - Earthquake/ Tsunami,
 - Land sliding,
 - Flood,
 - Collapse of building or structures,
 - Confined Space Rescue,
 - Elevated/ Pole Top Rescue,
 - Insulated Electrical Rescue Hook to separate the victim from the electrical source,
 - Resources,
 - External Emergency Support Services,
 - Cleanup and Decontamination.



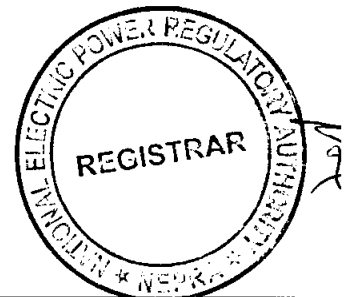


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7.45 Incident Reporting and Investigation

- 7.45.1. Licensee employee/ contractor shall report all on-job injuries or occupational illnesses, no matter how slight, immediately to his supervisor/ in-charge. Supervisor/ in-charge shall ensure that injured employee gets proper first aid/ medical treatment.
- 7.45.2. Licensee shall report property/ asset damage incidents to NEPRA, resulting in direct cost as per criteria set by licensee.
- 7.45.3. Licensee shall immediately report incident to NEPRA through Phone/ WhatsApp/ SMS related with employee, contractor or member of general public OR in case of outage of an electrical generation plant or grid/ sub-station due to fire or explosion incident.
- 7.45.4. Use Annexure-2 for Incident Notification to fill/ upload initial occurrence report at NEPRA Data Exchange Portal within 24 hours. Original record shall be retained and preserved by licensee for three (03) years.
- 7.45.5. All incidents including Near miss incidents shall be immediately investigated by Licensee to find out root cause to prevent recurrence of similar incident in future. The investigation report of any particular incident shall be submitted to NEPRA, as and when directed.
- 7.45.6. Licensee shall upload soft copy of final investigation report at NEPRA Data Exchange Portal within thirty (30) working days from the date of the incident. If more than thirty (30) working days are required, the licensee shall provide proper detailed justification with required days for completion of investigation report to obtain NEPRA approval.
- 7.45.7. Licensee shall secure and preserve all relevant evidences/ documents including victim(s) all PPE for investigation process.
- 7.45.8. The original complete investigation report shall be retained and preserved at company safety office file for plant/ equipment life cycle and shall include the following:
 - a. Incident Title,
 - b. Executive Summary,
 - c. Table of Contents,
 - d. Letter of appointment of the investigation leader,

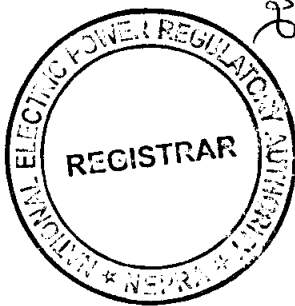




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- e. List of investigation team members (For Team Investigations),
- f. Definitions (if required),
- g. Description of site facility,
- h. Operations/ activity prior to the incident,
- i. Description of the incident,
- j. Sequence/ timeline of events prior to incident, during, and immediately after the incident,
- k. Incident direct cost,
- l. Emergency response description,
- m. Root cause analysis or equivalent methodology for main root and primary contributing causes,
- n. Corrective and preventive recommendations with responsible person assigned for each recommendation for implementation along with reasonable/ achievable completion date,
- o. Annexures (organized as Annexure 1, 2, 3...) to include copies of relevant documents such as incident sketches, site photographs, CNIC, driving license, victim PPE information and pictures, medical report, interview statements of injured victim/ witness with contact details, isolation record, relevant work permits, excavation approval, method statement, JSA, risk assessment, HAZOP record, technical report, training record of victim, total experience of victim, victim qualification and certification, inspection report, preventive maintenance (PM) record, break-down maintenance record, maintenance or contractor procedure, equipment manual, specification sheet, heavy equipment inspection and certification, daily inspection checklist, operator and rigger certifications, lifting plan, scaffolding plan, scaffold supervisor and inspector certifications, operation SOP, logbook, field checklist, duty roster, shift changeover, process and instrument drawing (P&ID)/process flow diagrams (PFD)/single line diagram, distributed control system (DCS) trend, MOC record, pre start-up safety review record, FIR/police report, compensation proof, fire station report, CCTV record, and voice record, etc.



7.45.9. Recommendation should be specific, measurable, attainable, realistic, and time-bound (SMART), based on facts/ evidences (proof of event), not on beliefs. The



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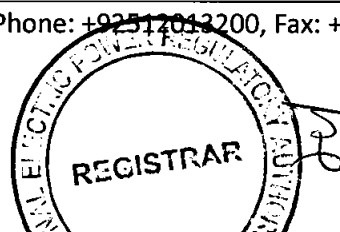
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recommendation should add value to HSE or operations otherwise no need to initiate recommendations.

- 7.45.10. Recommendation shall be clear with full information and if the action is related to any equipment, equipment number shall be included in the recommendation statement.
- 7.45.11. Responsible person for recommendation implementation should be as low as Sub-divisional Officer (SDO)/ Manager. Each recommendation shall have clear completion/ target date.
- 7.45.12. Recommendation shall not be considered implemented till it is not verified physically by Licensee HSE Manager/ Representative or local authorities.
- 7.45.13. Licensee shall communicate critical/ high learning value incident as lesson learned with the potential for serious consequences to relevant personnel, interested parties or general public.
- 7.45.14. NEPRA may reject Licensee investigation report, if less than adequate. Licensee shall re-investigate the incident and re-submit the investigation report again to NEPRA within fifteen (15) working days.

7.46 HSE Performance Reporting

- 7.46.1. Licensee shall implement and comply with this Code to monitor and enhance HSE performance. Performance reporting shall not cover non-work related incident of Licensee employee/ contractor or any incident to a member of the general public, not directly involving licensee operations/ infrastructure. Performance reporting shall also not cover any incident, caused by the intentional act of Licensee employee/ contractor or member of the general public, shall be treated as a security incident and shall be handled with law enforcement departments accordingly.
- 7.46.2. NEPRA emphasizes accuracy and transparency when reporting monthly Occupational Health, Safety & Environment (HSE) performance report.
- 7.46.3. Use Annexure-3 to prepare monthly HSE Performance Report, shall include all HSE data of Licensee (Client, Contractor, Consultant and member of general public) and send soft copy to NEPRA email address: "hse@nepra.org.pk" by 10th of each month for the previous month HSE Performance. Original record of year-end report shall be retained and preserved by licensee for three (03) years.





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- 7.46.4. The Monthly HSE Performance Report shall contain only TOTAL NUMBERS of On-job Fatality, Lost Time Injury or Illness, Restricted Duty Injury or Illness, Medical Treatment Injury or Illness, First Aid Injury or Illness, Fire Incident at Licensee Property, Licensee Property Damage Incident, Crane/Heavy Equipment Incident related to Licensee, Fatality of member of general public and Major Environmental or Occupational Health Violation.
- 7.46.5. The Monthly HSE Performance Report shall NOT contain any supporting or relevant document unless directed by NEPRA.

7.47 HSE Audits

- 7.47.1. Licensee should establish a mechanism for Internal HSE Audit in order to assess the implementation of HSE Management System, this Code requirements, adhere to national and provincial legal requirements, to prevent the non-conformities, and to detect and correct unsafe practices/ conditions and deficiencies.
- 7.47.2. NEPRA will monitor the licensee HSE performance and initiatives and will randomly verify as deem necessary, through audits and site visits (planned or unplanned).
- 7.47.3. Licensee shall allow NEPRA nominated HSE Auditors at their sites to conduct audit for HSE Management System.
- 7.47.4. Licensee shall spare and nominate their HSE personnel when requested by NEPRA for auditing another Licensee HSE Management System to identify gaps and provide site specific recommendations for improvement. Licensee shall cover all expense of their HSE personnel while on business travel/ assignment for audit.

7.48 Annual HSE Performance Evaluation

- 7.48.1. NEPRA will conduct annual HSE performance evaluation for Licensee "HSE Management System" for last fiscal year, based on provided documents and record.
- 7.48.2. Licensee shall provide/ attach all supporting documents/ evidences at NEPRA Data Exchange Portal for last fiscal year by July 31st of each year for Annual HSE performance evaluation in accordance to "Annexure-4: Annual HSE Performance Evaluation Form".
- 7.48.3. NEPRA will assign category points such as outstanding, good, adequate, poor or unsatisfactory to rate the HSE performance of Licensee, based on provided supporting documents/ evidences. NEPRA will deduct points for unavailability, irrelevant, incomplete or unapproved documents/ evidences.

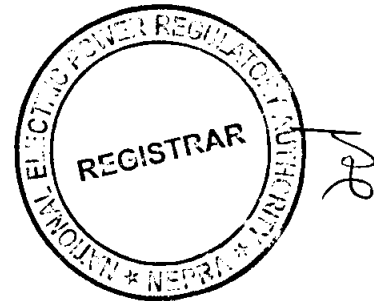




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- 7.48.4. Subsequent evaluations shall be conducted every six (6) months, if Licensee has persistent Poor or Unsatisfactory HSE performance.
- 7.48.5. Formal performance counselling shall be conducted, if Licensee has persistent Poor or Unsatisfactory safety performance after three (03) subsequent evaluations.
- 7.48.6. If Licensee fails to take corrective and preventive action within prescribed time to improve his HSE performance, NEPRA may initiate legal proceedings against the licensee or registered persons under NEPRA (Fines) Rules, 2002 until satisfactory corrective and preventive action has been implemented.





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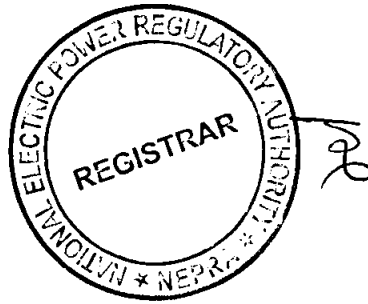
8. Annexures

Annexure-1: HSE Team Contact Details Form

Annexure-2: Incident Notification Form

Annexure-3: Monthly HSE Performance Report Form

Annexure-4: Annual HSE Performance Evaluation Form





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Annexure-1: HSE Team Contact Details Form

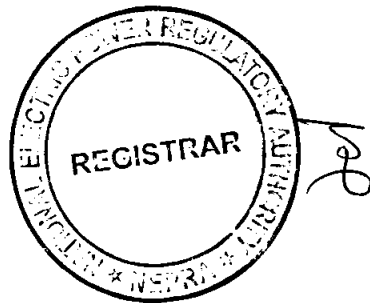
Licensee Name		License Category *	
NEPRA License No.		CEO Name	
CEO Mobile Contact No.		CEO Email Address	
Licensee Corporate Address			

No.	HSE Team Name(s)	Job Title	Site/Plant Address	Office Contact No.	Mobile Contact No.	WhatsApp Contact No.	Email Address	Remarks
1.								
2.								
3.								
4.								
5.								

Role	Name	Mobile Number	Signature	Date
Prepared by (Licensee Representative)				

* License Category: Generation, Transmission or Distribution

Note-1: Licensee shall upload HSE staff contact details at NEPRA's Data Exchange Portal as mentioned in Annexure-1 "HSE Team Contact Details" within seven (07) working days. Licensee's representative shall also upload the revised and updated contact list, in case of new recruitment, transfer, resigned or in case of HSE organization change. Avoid use of abbreviations.



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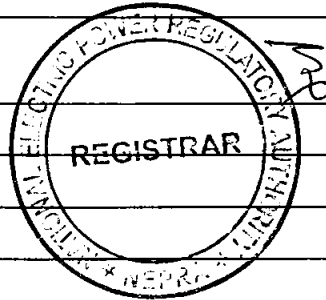
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Annexure-2: Incident Notification Form

(Required within 24 hours)

Licensee Name		NEPRA License No.	
Incident Location		Date of Incident	
Time of Incident		Incident No.	
License Category (Tick mark which is applicable)	Generation <input type="checkbox"/>	Transmission <input type="checkbox"/>	Distribution <input type="checkbox"/>
Incident Category (Tick mark which is applicable)	Employee <input type="checkbox"/>	Contractor <input type="checkbox"/>	General Public <input type="checkbox"/>
	Environmental Violation <input type="checkbox"/>	Occupational Health Violation <input type="checkbox"/>	Outage of Plant or Grid/ Sub-station <input type="checkbox"/>

Incident Type	Fatality <input type="checkbox"/>	Public Injury <input type="checkbox"/>	Public Illness <input type="checkbox"/>
	Lost Time <input type="checkbox"/>	Restricted Duty <input type="checkbox"/>	Medical Treatment <input type="checkbox"/>
	First Aid <input type="checkbox"/>	Fire <input type="checkbox"/>	Release/ Spilled <input type="checkbox"/>
	Crane/ Heavy Equipment <input type="checkbox"/>	Property Damage <input type="checkbox"/>	
Total Victim(s)			
Name of Victim-1		CNIC No.	
Gender		Age	
Fathers Name		Occupation of Victim	
Victim Relative Contact No.		Extent of Injury	
Name of Victim-2		CNIC No.	
Gender		Age	
Fathers Name		Occupation of Victim	
Victim Relative Contact No.		Extent of Injury	
Witness-1 Name		Witness-1 Contact No	
Witness-2 Name		Witness-2 Contact No	
Witness-3 Name		Witness-3 Contact No	
Which PPE used by victim(s) at the time of incident:			



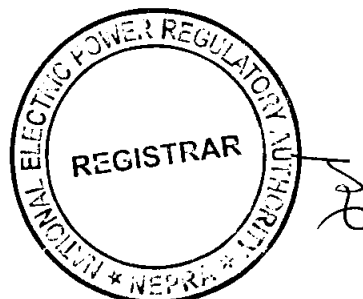
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Incident Description. (Write down how incident happened, beginning with the normal job activity that led to the incident. Put the events with timing, as far as possible, in the order they happened)



Action Taken	Yes	No	
Is the local police informed/ FIR lodged?			
Is necessary evidence immediately gathered from the incident site for Licensee investigation process?			
Is an investigation team formed by Licensee to determine root cause?			
Responsibility is fixed upon (with justification).			
What corrective actions are implemented immediately at incident site?			
What preventive actions are implemented at other sites to avoid reoccurrence of similar Incident?			
Is this incident reported within 24 hours? (Yes/No). If No, provide justification.			
Role	Name	Mobile Number	Signature
Prepared by (Licensee Representative)			

Note-1: Licensee shall immediately report incident to NEPRA through Phone/ WhatsApp/ SMS or outage of an electrical generation plant or grid/sub-station due to fire or explosion incident and fill/ upload initial occurrence report at NEPRA Data Exchange Portal in Incident Notification Form.

Note-2: In case of multiple fatalities/ injuries due to one incident, Incident Notification shall include



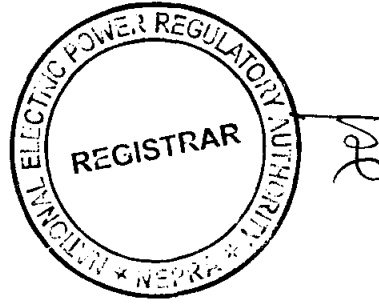
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details of all Victims. It shall also include all witnesses' names and contact numbers.

Note-3: Incident Notification shall cover all incidents which directly involving Licensee Operations/ Infrastructure.

Note-4: Incident Notification shall not cover any incident, caused by intentional act of Licensee employee, contractor, visitor or member of general public, shall be treated as security incident and shall be handled with law enforcement departments accordingly.

Note-5: Attach/ insert incident site and victim PPE pictures including other relevant preliminary information/ documents.





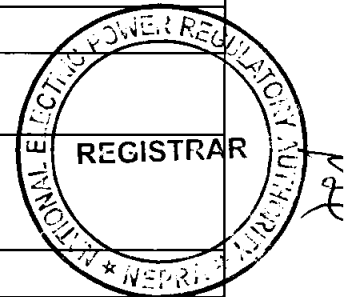
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Annexure-3: Monthly HSE Performance Report Form

Company Name	
NEPRA License No.	
License Category*	
Address	
Reporting Month	

No.	Classification / Type	Total Last Month	Total Year To Date
1.	Fatality of member of general public, involving Licensee Operations/ Infrastructure.		
2.	On-job Fatality of Employee.		
3.	On-job Fatality of Contractor.		
4.	Fatality Incident Notification submitted to NEPRA.		
5.	Injury or Illness of member of general public, involving Licensee Operations/ Infrastructure.		
6.	Lost Time Injury or Illness of Employee.		
7.	Lost Time Injury or Illness of Contractor staff.		
8.	Restricted Duty Injury or Illness of Employee		
9.	Restricted Duty Injury or Illness of Contractor staff.		
10.	Medical Treatment Injury or Illness of Employee.		
11.	Medical Treatment Injury or Illness of Contractor staff.		
12.	First Aid Injury or Illness of Employee.		
13.	First Aid Injury or Illness of Contractor staff.		
14.	Fire Incident at Licensee Property.		
15.	Licensee Property Damage Incident.		
16.	Crane/Heavy Equipment Incident related to Licensee.		
17.	Major Environmental Violation related with Emissions, Liquid Effluent and Solid Waste, etc.		
18.	Major Occupational Health Violation related with Licensee Workplace Ventilation/Temperature, Drinking Water, Noise, Illumination, Heat Stress, etc.		
19.	Outage of plant or any grid/sub-station due to any incident.		





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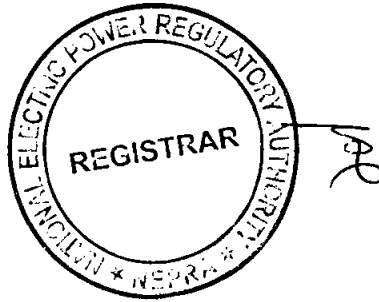
Role	Name	Mobile Number	Signature
Prepared by (Licensee Representative)			

* License Category: Generation, Transmission or Distribution

Note-1: HSE Performance Report shall not cover non-work related incident of Licensee employee, contractor staff, visitor or any incident to member of general public, not directly involving Licensee Operations/ Infrastructure.

Note-2: HSE Performance Report shall include all HSE data of Licensee (client, contractors, visitors, consultants and members of general public).

Note-3: This form shall be send to NEPRA email address: "hse@nepra.org.pk" by 10th of each month for the previous month HSE Performance.





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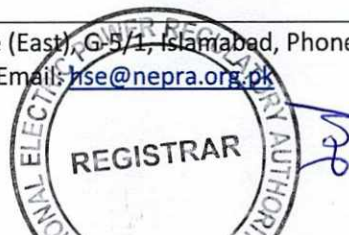
Annexure-4: Annual HSE Performance Evaluation Form

Licensee Name		License Category (Generation, Transmission or Distribution)	
NEPRA License No.		Licensee Corporate Address	
Evaluation Year		Submitted Date	

Instructions:

1. Licensee shall provide/ attach all supporting documents, record and evidences of last fiscal year for HSE Performance Evaluation at NEPRA Data Exchange Portal in Annual HSE Performance Evaluation Form by July 31st of each year.
2. NEPRA will assign category points, based on provided supporting documents, record and evidences. NEPRA will deduct points for unavailability, irrelevant, incomplete or unapproved documents/ evidences.
3. Subsequent evaluations shall be conducted every six (6) months, if Licensee has persistent Poor or Unsatisfactory HSE performance.
4. Formal performance counselling shall be conducted, if Licensee has persistent Poor or Unsatisfactory HSE performance after three (3) subsequent evaluations.
5. If Licensee fails to take corrective and preventive action within prescribed time to improve his HSE performance, NEPRA may initiate legal proceedings against the licensee or registered persons under NEPRA (Fines) Rules, 2002 until satisfactory corrective and preventive action has been implemented.
6. NEPRA will assign category points from 1 to 5 using the following scale to rate the HSE performance of Licensee.

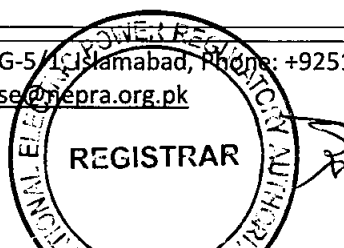
Points	1	2	3	4	5
Points x No. of Categories	1 x 20	2 x 20	3 x 20	4 x 20	5 x 20
Percentage	20	40	60	80	100
Category	Unsatisfactory 1 - 20	Poor 21 - 40	Adequate 41 - 60	Good 61 - 80	Outstanding 81 - 100
Licensee Evaluation Percentage					





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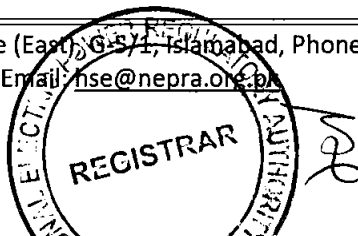
Assessment Categories		Points
1.	<p><u>Licensee HSE Management System</u></p> <p>HSE Management System/ Manual is available in compliance to Power Safety Code and approved by NEPRA?</p> <p>ISO 45001, ISO 14001 or any other Health, Safety & Environment standard certification achieved/ maintained in evaluation year. Legal compliance register for national and provincial legal and other requirements are maintained. (Provide/attach HSE Management System/ Manual or NEPRA approval letter, standard certification copy and Legal compliance register)</p> <p>Licensee Comments:</p> <p>NEPRA Comments:</p>	
2.	<p><u>HSE Management Team</u></p> <p>Does the Licensee's company provide adequate numbers of qualified HSE staff at site for site supervision, who effectively oversee their employees and contractors?</p> <p>(Provide/attach HSE Management Team detail, training certifications or training attendance record and total number of company direct employees)</p> <p>Licensee Comments:</p> <p>NEPRA Comments:</p>	
3.	<p><u>Hazards/ Aspect Identification and Risk/ Impact Assessments</u></p> <p>Approved Hazards/ Aspect Identification and Risk/ Impact Assessments is available? Recommendations implemented. (Provide/attach assessment document and recommendations implementation evidence)</p> <p>Licensee Comments:</p> <p>NEPRA Comments:</p>	
4.	<p><u>HSE Meeting</u></p> <p>HSE Meeting approved plan is available and conducted at top management level. Minutes of Meeting is documented.</p> <p>(Provide/attach approved plan and record of minutes of meetings related with evaluation year)</p> <p>Licensee Comments:</p>	





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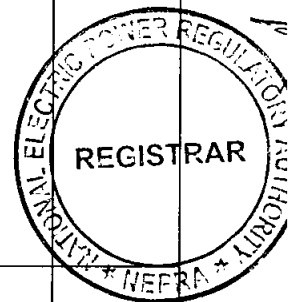
	NEPRA Comments:	
5.	<u>Job Specific Training</u> Job Skills Competency Training approved plan is available. Does the company provide job skills competency training (e.g., Electrical Technician, Assistant Lineman, Lineman, Line Superintendent, Heavy Equipment Operators, Riggers, and Scaffold Supervisors, etc.)? (Provide/attach approved plan and record of training related with evaluation year) Licensee Comments: NEPRA Comments:	
6.	<u>HSE Awareness Training</u> HSE awareness trainings approved plan is available (e.g., Work Permit Issuer & Receiver, Electrical Safety, Isolation, PPE/T&P, Fire Watch, Standby man, Fire Prevention, First Aid, Working at Height, Confined Space and Emergency & Rescue, etc.) and conducted accordingly. Did all essential employees/ contractors attended HSE awareness trainings including new employees/ contractors before they conduct their activities? (Provide/attach approved plan and record of training related with evaluation year) Licensee Comments: NEPRA Comments:	
7.	<u>Management HSE Walk-through/ Site Tours</u> Top Management HSE Walk-through/Site Tours approved plan is available and conducted accordingly. Does management participated and corrective actions are taken? (Provide/attach approved plan and evidence related with evaluation year) Licensee Comments: NEPRA Comments:	
8.	<u>Asset Integrity Management</u> Preventive Maintenance approved plan is available and implemented. Safety critical protection devices, instrumentation, interlocks, protection relays, breakers, controls, safety relief valves, F&G detection system, software and components approved list is available and testing is conducted as per plan. (Provide/attach list, plan and execution evidences related with evaluation year)	





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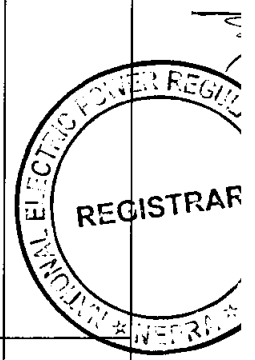
	Licensee Comments: NEPRA Comments:	
9.	<u>Management of Change (MOC)</u> Management of Change (MOC) program is available and implemented. MOC Committee/team is present to review and approve any permanent or temporary change, modification, addition or deletion which is "Not In Kind". (Provide/attach MOC program document, notification of MOC committee/team and a sample of approved MOC related with evaluation year) Licensee Comments: NEPRA Comments:	
10.	<u>Personal Protective Equipment (PPE)/ Tools & Plants (T&P)</u> Personal Protective Equipment (PPE)/Tools & Plants (T&P) approved list is available with material description. Adequate amount of PPE/T&P inventory is maintained by Licensee at each site? (Provide/attach approved list, available inventory list and inspection evidences related with evaluation year) Licensee Comments: NEPRA Comments:	
11.	<u>Electrical and Mechanical Isolation</u> Electrical and mechanical isolation system is available and implemented. (Provide/attach isolation system document and evidences) Licensee Comments: NEPRA Comments:	
12.	<u>Permit to Work</u> Permit to Work system is available and implemented. Approved authorized Permit to Work Issuer & Receiver List is available? (Provide/attach PTW system document and Permit to Work Issuer & Receiver List related with evaluation year) Licensee Comments: NEPRA Comments:	
13.	<u>Heavy Equipment, Machinery, Power Driven Tools and other Handheld Portable Equipment's</u>	





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	<p>Heavy equipment, machinery, power driven tools and other handheld portable equipment approved list is available, periodically inspected and inspection tag installed. Heavy Equipment Operator and Rigger list is available and are trained & certified? (Provide/attach lists, inspection and valid certification record related to evaluation year)</p> <p>Licensee Comments:</p> <p>NEPRA Comments:</p>	
14.	<p><u>HSE Audit</u></p> <p>Internal HSE Audit system is available, audit is planned and conducted in evaluation year. (Provide/attach HSE Audit system document, audit plan, audit report and non-compliance open/close status)</p> <p>Licensee Comments:</p> <p>NEPRA Comments:</p>	
15.	<p><u>Waste Disposal System</u></p> <p>Waste Disposal System is available and implemented accordingly. Wastes are properly labelled and regularly removed for disposal.</p> <p>(Provide/attach Waste Disposal System document and disposal evidences related with evaluation year)</p> <p>Licensee Comments:</p> <p>NEPRA Comments:</p>	
16.	<p><u>First Aid Facilities</u></p> <p>First aid facilities/ boxes are available at each site. Inspection and refilling are done on monthly basis in first week of each month. (Provide/attach sample inspection record related with evaluation year)</p> <p>Licensee Comments:</p> <p>NEPRA Comments:</p>	
17.	<p><u>Emergency Management</u></p> <p>Emergency Management system is available and implemented. Announced and unannounced emergency drills are planned and conducted. (Provide/attach Emergency Management system document, drill plan and report)</p>	





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	<p>Licensee Comments:</p> <p>NEPRA Comments:</p>	
18.	<p><u>Incident Reporting and Investigation</u></p> <p>Incident Reporting & Investigation system is available and implemented. Does Licensee follow NEPRA emergency reporting instruction for incident? Has the Licensee conducted investigation for their incidents including Near-miss? (Provide/attach Incident Reporting & Investigation system document, sample investigation report of near miss or first aid injury related with evaluation year)</p> <p>Total work-related incidents of Employee/ Contractor in an evaluation year:</p> <p>Total incidents of Public in an evaluation year as Licensee was responsible:</p> <p>Licensee Comments:</p> <p>NEPRA Comments:</p>	
19.	<p><u>Response to Recommendations/ Corrective Actions</u></p> <p>Are recommendations/ corrective actions that have been requested by NEPRA are fully implemented within the specified period of time? (Provide/attach evidences related with evaluation year)</p> <p>Licensee Comments:</p> <p>NEPRA Comments:</p>	
20.	<p><u>Monthly HSE Performance Report</u></p> <p>Monthly HSE Performance Reports are submitted on time with correct data evaluation year.</p> <p>Licensee Comments:</p> <p>NEPRA Comments:</p>	
Total Performance Evaluation Points:		

Role	Name	Mobile Number	Signature	Date
Prepared by (Licensee Representative)				



Handwritten mark