

Federal Democratic Republic of Ethiopia
OCCUPATIONAL STANDARD



**POWER GENERATION AND
SUBSTATION OPERATION AND
MAINTENANCE SUPPORT**



NTQF Level II



*Ministry of Education
June 2012*

Introduction

Ethiopia has embarked on a process of reforming its TVET-System. Within the policies and strategies of the Ethiopian Government technology transformation – by using international standards and international best practices as the basis and adopting adapting and verifying them in the Ethiopian context – is a pivotal element. TVET is given an important role with regard to technology transfer. The new paradigm in the outcome-based TVET system is the orientation at the current and anticipated future demand of the economy and the labor market.

The Ethiopia Occupational Standards (EOS) is the core element of the Ethiopian National TVET-Strategy and an important factor within the context of the National TVET-Qualification Framework (NTQF). They are national Ethiopian standards which define the occupational requirements and expected outcome related to a specific occupation without taking TVET delivery into account.

This document details the mandatory format sequencing wording and layout for the Ethiopia Occupational Standard which comprised of Units of Competence.

A Unit of Competence describes a distinct work activity. It is documented in a standard format that comprises:

- Occupational title and NTQF level
- Unit title
- Unit code
- Unit descriptor
- Elements and Performance criteria
- Variables and Range statement
- Evidence guide

Together all the parts of a Unit of Competence guide the assessor in determining whether the candidate is competent.

The ensuing sections of this EOS document comprise a description of the occupation with all the key components of a Unit of Competence:

- chart with an overview of all Units of Competence for the respective level (Unit of Competence Chart) including the Unit Codes and the Unit Titles
- contents of each Unit of Competence (competence standard)
- occupational map providing the technical and vocational education and training (TVET) providers with information and important requirements to consider when designing training programs for this standards and for the individual a career path

Page 1 of 141	Ministry of Education Copyright	Power Generation and Substation Operation and Maintenance Support Ethiopian Occupational Standard	Version 1 June 2012
---------------	------------------------------------	---	------------------------

UNIT OF COMPETENCE CHART

Occupational Standard: Power Generation and Substation Operation and Maintenance Support		
Occupational Code: EIS PGS		
<i>NTQF Level II</i>		
EIS PGS2 01 0612 Comply with OHS Policy and Procedures	EIS PGS2 02 0612 Apply Environmental and Sustainable Energy Procedures	EIS PGS2 03 0612 Maintain and Utilize Records
EIS PGS2 04 0612 Conduct Minor/Basic Mechanical Maintenance	EIS PGS2 05 0612 Maintain Electrical Equipment	EIS PGS2 06 0612 Perform Plant Lubrication
EIS PGS2 07 0612 Operate Local Systems	EIS PGS2 08 0612 Perform Process Plant Inspections	EIS PGS2 09 0612 Conduct Emergency Response within Workplace Team
EIS PGS2 10 0612 Clean Plant and Equipment	EIS PGS2 11 0612 Perform Basic Rigging Work	EIS PGS2 12 0612 Perform Intermediate Rigging Work
EIS PGS2 13 0612 Perform Dogging Work	EIS PGS2 14 0612 Perform Basic Scaffolding	EIS PGS2 15 0612 Perform Intermediate Scaffolding
EIS PGS2 16 0612 Conduct Elevating Work Platform Operations	EIS PGS2 17 0612 Operate Lifting and Load Shifting Equipment (10tn)	EIS PGS2 18 0612 Operate Lifting and Load Shifting Equipment (greater than 10tn)
EIS PGS2 19 0612 Transport Plant and Equipment	EIS PGS2 20 0612 Perform Basic Machining Operations	EIS PGS2 21 0612 Perform Routine Oxyacetylene (Fuel Gas) Welding

EIS PGS2 22 0612 Perform Routine Manual Arc Welding	EIS PGS2 23 0612 Perform Tool Store Duties	EIS PGS2 24 0612 Maintain Battery Banks and Cells
EIS PGS2 25 0612 Conduct Minor/Basic Electrical Maintenance	EIS PGS2 26 0612 Operate and Monitor Fuel Supply	EIS PGS2 27 01 0612 Operate Air Conditioning Plant
EIS PGS2 28 0612 Operate and Monitor Site Services Water Systems	EIS PGS2 29 0612 Operate and Monitor Internal Combustion Single Fuel Reciprocating Engine	EIS PGS2 30 0612 Operate and Monitor Internal Combustion Dual Fuel Reciprocating Engine
EIS PGS2 31 0612 Use Drawings Diagrams Schedules and Manuals	EIS PGS2 32 0612 Use Relevant Basic Computer Applications	EIS PGS2 33 0612 Work in Team Environment
EIS PGS2 34 0612 Participate in Workplace Communication	EIS PGS2 35 0612 Develop Business Practice	EIS PGS2 36 1012 Apply Continuous Improvement Processes (Kaizen)

Occupational Standard: Power Generation and Substation Operation and Maintenance Support Level II	
Unit Title	Comply with OHS Policy and Procedures
Unit Code	EIS PGS2 01 0612
Unit Descriptor	This unit deals with the skills and knowledge required to follow defined Occupational Health and Safety (OHS) policies and procedures related to the work being undertaken in order to ensure the individual's own safety and that of others in the workplace.

Elements	Performance Criteria
1. Follow workplace procedures for hazard identification and risk control.	<p>1.1 Workplace procedures and work instructions for controlling risks are identified and followed.</p> <p>1.2 Workplace procedures for dealing with accidents fires and emergencies are followed whenever necessary within scope of responsibilities and competencies.</p> <p>1.3 Responsibilities and duties of employees in relation to the relevant Occupational Health and Safety legislation are demonstrated in day-to-day actions.</p> <p>1.4 Potential hazards in the workplace are recognised and the enterprise procedure to eliminate the hazard is followed.</p> <p>1.5 The workplace is maintained in a safe and clean condition following the enterprise procedures.</p>
2. Contribute to participative arrangements for Occupational Health and Safety in the workplace	<p>2.1 Hazards in the work area are recognised and reported to designated personnel according to workplace procedures.</p> <p>2.2 Occupational Health and Safety issues are raised with designated personnel in accordance with workplace procedures and relevant Occupational Health and Safety legislation.</p>

Variable	Range
Relevant workplace procedures will include:	<ul style="list-style-type: none"> • hazard policies and procedures • emergency • fire and accident procedures • procedures for the use of personal protective clothing and equipment • hazard identification and issue resolution procedures and

	<ul style="list-style-type: none"> • job procedures and work instructions
Consultative arrangements could include:	<ul style="list-style-type: none"> • Occupational Health and Safety Committees and / or • emergency response teams

Evidence Guide	
Critical Aspects of Competence	Demonstrates knowledge and skills to: <ul style="list-style-type: none"> • implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures • apply sustainable energy principles and practices
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: <ul style="list-style-type: none"> • Relevant Occupational Health and Safety regulations • Relevant statutory legislation • Relevant enterprise/site safety procedures • Enterprise /site emergency procedures and techniques • Environmental legislation • Plant status
Underpinning Skills	Demonstrates skills to: <ul style="list-style-type: none"> • Apply relevant Occupational Health and Safety regulations • Apply relevant statutory legislation • Apply relevant enterprise/site safety procedures • Apply enterprise /site emergency procedures and techniques • Apply enterprise recording procedures • Locate and/or identify relevant plant and equipment • Identify plant status • Communicate effectively
Resources Implication	Access is required to real or appropriately simulated situations including work areas materials and equipment and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Generation and Substation Operation and Maintenance Support Level II	
Unit Title	Apply Environmental and Sustainable Energy Procedures
Unit Code	EIS PGS2 02 0612
Unit Descriptor	This unit deals with the skills, attitudes and knowledge required for the implementation of environmental procedures to demonstrate duty of care and to identify assess and control environmental risks and the impact of work related activities. It includes a commitment to the principles of sustainable energy

Elements	Performance Criteria
1. Relate environmental procedures to the specific work/site	1.1 Environmental procedures are identified and examined 1.2 Environmental procedures are related to the specific work(s)/site(s)
2. Implement environmental procedures	2.1 Relevant environmental procedures are applied to specific work(s)/site(s) 2.2 Environmental risks and impacts are identified 2.3 Environmental risks and impacts are assessed 2.4 Environmental risks and impacts are controlled and monitored throughout the work 2.5 Environmental incidents are dealt with and emergency procedures/contingencies are applied 2.6 Work is conducted in accordance with the principles of sustainable energy and energy conservation. 2.7 Provision for the re-cycling or re-use of materials is undertaken where possible 2.8 Environmental incidents are reported and recorded according to established procedures
3. Application of environmental procedures is reported and reviewed	3.1 Reporting procedures for environmental processes are monitored with respect to a specific work(s)/site(s) 3.2 Environmental risks potential impacts and incidents are monitored and reported according to established procedures 3.3 Participation and contribution into reviews of environmental procedures is carried out

Variable	Range
Specific work(s)/site(s)	May include but not limited to: <ul style="list-style-type: none"> • buildings • plants construction and maintenance sites • workshops • laboratories • dams • catchments • flood plains irrigation sites • wetlands • drainage sites • waste disposal sites
Environmental risks	May include but not limited to: <ul style="list-style-type: none"> • impact of mismanagement of chemicals • impact of mismanagement of biological agents • detrimental impact on limited water resources • spillage • waste disposal • detrimental impact on water catchment areas (urban and non-urban) • detrimental impact on rivers waterways and channels • unsatisfactory trade waste treatment and disposal processes • poor construction processes • planning deficiencies • neglect of sustainable energy principles
Environmental legislation	May include but not limited to: <ul style="list-style-type: none"> • relevant federal legislation • relevant legislation • relevant local government by-laws • relevant government or quasi government policies and regulations • relevant community planning and development agreements (e.g. land care agreements)
Incidents of environmental impact	May include but not limited to: <ul style="list-style-type: none"> • emissions to air • releases to/of water • releases to land • vibration and noise • disposal of waste • contamination of land • impact on communities • reduction of biodiversity

	<ul style="list-style-type: none"> • destruction of habitat • use of energy sources • waste generation processes and technologies • impact on culturally significant sites and • may involve the implementation of emergency responses
Environmental management documentation	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • information on applicable environmental laws or other requirements • complaint records • training records process information • process operational log books inspection maintenance and calibration records • relevant contractor and supplier information • incident reports • information on emergency preparedness and response records of significant environmental impacts and compliance records

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge in:</p> <ul style="list-style-type: none"> • Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures. • Knowledge and application of relevant sections of Environmental Legislative requirements Environmental Statutory legislation Enterprise/site Environmental and Sustainable energy principles and practice • Apply environmental risk assessment process • Implement monitor and review environmental procedures during the currency of the work • Dealing with an unplanned event by drawing on essential knowledge and skills to provide appropriate solutions
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • Environmental statutory requirements (acts legislation regulations) and codes of practice • Sustainable energy principles and practice • Environmental awareness and impact • Sources of pollution • Pollution minimization Occupational Health and Safety standards • Resource usage • Communication principles • Risk management

	<ul style="list-style-type: none"> • Stakeholder interests concerns and sensitivities • Responding to environmental issues and reporting procedures
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • Apply: environmental standards sustainable energy principles and practices • Occupational Health and Safety standards • Recognize potential environmental issues • Carry out environmental risk assessments • Identify environmental impacts of work • Enterprise environmental procedures • Identify sources of pollution • Monitor environmental procedures / requirements and communicate effectively with stakeholders and report.
Resources Implication	Access is required to real or appropriately simulated situations including work areas materials and equipment and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

Occupational Standard: Power Generation and Substation Operation and Maintenance Support Level II	
Unit Title	Maintain and Utilize Records
Unit Code	EIS PGS2 03 0612
Unit Descriptor	This unit deals with the skills, attitudes and knowledge required in the maintenance and use of recorded data.

Elements	Performance Criteria
1. Maintain records	<p>1.1 The appropriate recording tool is selected in accordance with job requirements</p> <p>1.2 Information is recorded and/or updated using appropriate techniques in accordance with work requirements</p> <p>1.3 Recording requirements are identified and assessed in accordance with work requirements</p> <p>1.4 Records are created in accordance with work requirements</p> <p>1.5 Records are stored in an appropriate manner in accordance with work requirements</p> <p>1.6 Where appropriate the teams and individuals roles and responsibilities within the team are identified and where required assist in the provision of the on-the-job training</p>
2. Retrieve records	<p>2.1 Records are retrieved and interrogated in accordance with work requirements</p> <p>2.2 Source of information/records is selected in accordance with work requirements</p> <p>2.3 Required information/records are selected in accordance with work requirements</p>

Variable	Range
Recording tools	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • memos log sheets screen displays graphs PC outage reports operations whiteboard SCADA trending printer system diagrams diaries chart recorders data loggers and D.A.S.
Records	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • operating events regular data acquisition memos explanations recommendations system diagrams verbal reports visual comparison and statistics
Safety standards	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • relevant sections of occupational health and safety legislation enterprise safety rules relevant Regional and federal legislation and national standards for plant

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: <ul style="list-style-type: none"> • Occupational health and safety legislation • Statutory legislation • Enterprise/site safety procedures • Enterprise/site emergency procedures • Acquiring and analyzing information relevant for recording • Maintaining records • Retrieving records
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: <ul style="list-style-type: none"> • Relevant occupational health and safety regulations Relevant statutory legislation • Relevant enterprise/site safety procedures • Enterprise/site emergency procedures and techniques Enterprise recording procedures • External recording systems • Screen based data • Communication principles
Underpinning Skills	Demonstrates skills to: <ul style="list-style-type: none"> • Apply relevant occupational health & safety regulations • Apply relevant statutory legislation • Apply relevant enterprise/site safety procedures • Apply enterprise/site emergency procedures and techniques Apply enterprise recording procedures • Acquire and analyze information. • Plan and prioritize work • Record information • Use diagrams drawings and symbols • Retrieve information • Communicate effectively.
Resources Implication	Access is required to real or appropriately simulated situations including work areas materials and equipment and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

Occupational Standard: Power Generation and Substation Operation and Maintenance Support Level II	
Unit Title	Conduct Minor/Basic Mechanical Maintenance
Unit Code	EIS PGS2 04 0612
Unit Descriptor	This unit refers to the range of minor/basic maintenance functions associated with but not limited to mechanical equipment

Elements	Performance Criteria
1. Plan and prepare for the work	<p>1.1 Work requirements are identified from request/work orders or equivalent and clarified/confirmed with appropriate parties or by site inspection</p> <p>1.2 Occupational health and safety standards, statutory requirements, relevant Ethiopian standards, codes of practice, manufacturers' specifications, environmental requirements and enterprise procedures are identified, applied and monitored throughout the work procedure</p> <p>1.3 Resources required to satisfy the work plan are identified, obtained and inspected for compliance with the job specifications</p> <p>1.4 Relevant plans drawings and texts are selected and interpreted in accordance with the work plan</p> <p>1.5 Correct size, type and quantity of materials/components are determined obtained and inspected for compliance with the job specifications</p> <p>1.6 Work is planned in detail including sequencing and prioritizing and considerations made, where appropriate, for the maintenance of plant security and capacity in accordance with system/site requirements</p> <p>1.7 Coordination requirements, including requests for isolations where appropriate, are resolved with others involved, affected or required by the work</p> <p>1.8 Potential hazards are identified and prevention and/or control measures are selected in accordance with the work plan and site procedures</p> <p>1.9 Work area is prepared in accordance with work requirements and site procedures</p> <p>1.10 Where appropriate the teams and individuals roles and responsibilities within the team are identified and where required assist in the provision of the on-the-job training</p>

2. Conduct minor maintenance	<p>2.1 Required isolations are confirmed where appropriate in accordance with enterprise requirements</p> <p>2.2 Minor maintenance is conducted in accordance with the work plan and site Requirements</p> <p>2.3 Minor adjustments are undertaken in accordance with prescribed procedures and schedules and site requirements</p> <p>2.4 Faults are reported to the relevant parties in accordance with site/enterprise procedures</p>
3. Complete the work	<p>3.1 Work is completed and appropriate personnel notified in accordance with site/enterprise requirements</p> <p>3.2 Work area is cleared of waste, cleaned, restored and secured in accordance with site/enterprise procedures</p> <p>3.3 Plant tools and equipment are maintained and stored in accordance with site/enterprise procedures 079.3 complete the work</p> <p>3.4 Work completion details are finalized in accordance with site/enterprise procedures</p>

Variable	Range		
Materials	May refer to: <ul style="list-style-type: none"> • lubricants • cleaning agents and • emery paper 		
Isolations	Can refer to: <ul style="list-style-type: none"> • electrical/mechanical or other associated processes 		
Minor maintenance	May include : <ul style="list-style-type: none"> • lubrication • visual inspection • gland nipping • draining of water taps • filter cleaning and changing • charging bowl and ball mills • exchange of conveyor rollers • removing/replacing access covers • replacing shear pins • applying plastic metals • degreasing preparing surfaces • limited mechanical assembly and • minor fabrication tasks e.g. brackets gaskets 		
Appropriate	May refer to:		
Page 13 of 141	Ministry of Education Copyright	Power Generation and Substation Operation and Maintenance Support Ethiopian Occupational Standard	Version 1 June 2012

personnel	<ul style="list-style-type: none"> • supervisor • tradesperson or • operations personnel
Work site environment	<p>May be affected by:</p> <ul style="list-style-type: none"> • nearby plant or processes e.g. chemical heat dust noise gas and oil
Tools	<p>May include:</p> <ul style="list-style-type: none"> • drills • angel grinders • buffers • sanders • grease guns • benders • guillotines • pressers • scrapers and • hand tools
Equipment	<p>May include:</p> <ul style="list-style-type: none"> • pumps • fans • compressors • blowers • transmissions • AC/DC rotating electrical plant • pipe work • heat exchangers • tanks • dampers • mills • feeders • crushers • conveyors and • air slides
Work completion details and plans	<p>May include:</p> <ul style="list-style-type: none"> • plant and maintenance records • job cards • check sheets • on device labeling updates and reporting and/or • documenting equipment defects

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates knowledge and skills in:</p> <ul style="list-style-type: none"> • Occupational health and safety legislation Statutory legislation Enterprise/site safety procedures • Enterprise/site emergency procedures • Maintenance techniques and procedures • Completion of work procedures
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of :</p> <ul style="list-style-type: none"> • Occupational health and safety standards • Relevant statutory requirements and codes of practice • Relevant enterprise procedures and standards • Equipment and material required to perform the work • Isolation procedures • General layout of plant/work site and operation of its equipment • Relevant minor maintenance • lubrication and replacement techniques • Hand and portable power tools • Lifting techniques • Surface preparation techniques • Communication principles
Underpinning Skills	<p>Demonstrates skills to :</p> <ul style="list-style-type: none"> • Apply occupational health and safety standards Carry out work in a logical and safe manner Apply maintenance procedures Identify and select materials for the job Carry out work completion details Use hand and portable power tools • Clean and lubricate plant and equipment Perform basic drilling • Prepare surfaces for finishing Apply plastic metals • Store and maintain tools and equipment • Communicate effectively.
Resource Implications	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> • Access to relevant workplace documentation financial records and equipment
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation/Demonstration with Oral questioning
Context for Assessment	<p>Competence may be assessed in the workplace or in a simulated work environment</p>

Occupational Standard: Power Generation and Substation Operation and Maintenance Support Level II	
Unit Title	Maintain Electrical Equipment
Unit Code	EIS PGS2 05 0612
Unit Descriptor	This unit refers to the maintenance of electrical equipment including but not limited to rotating and static machines appliances luminaries and associated control equipment but excludes H.V. equipment.

Elements	Performance Criteria
1. Plan and prepare for the work	<p>1.1 Work requirements are identified from request/work orders or equivalent and clarified/confirmed with appropriate parties or by site inspection</p> <p>1.2 Occupational health and safety standards, statutory requirements, relevant Ethiopian Standards, codes of practice, manufacturers' specifications, environmental requirements and enterprise procedures are identified, applied and monitored throughout the work procedure</p> <p>1.3 Resources required to satisfy the work plan are identified obtained and inspected for compliance with the job specifications</p> <p>1.4 Relevant plans drawings and texts are selected and interpreted in accordance with the work plan</p> <p>1.5 Correct size, type and quantity of materials/components are determined obtained and inspected for compliance with the job specifications</p> <p>1.6 Work is planned in detail including sequencing and prioritizing and considerations made, where appropriate, for the maintenance of plant security and capacity in accordance with system/site requirements</p> <p>1.7 Coordination requirements, including requests for isolations where appropriate, are resolved with others involved affected or required by the work</p> <p>1.8 Potential hazards are identified and prevention and/or control measures are selected in accordance with the work plan and site procedures</p> <p>1.9 Work area is prepared in accordance with work requirements and site procedures</p> <p>1.10 Where appropriate the teams and individuals roles and</p>

	responsibilities within the team are identified and where required assist in the provision of the on-the-job training
2. Carry out maintenance	<p>2.1 Required isolations are confirmed where appropriate in accordance with site requirements</p> <p>2.2 Equipment is maintained using appropriate plans drawings and texts in accordance with the work plan</p> <p>2.3 Equipment is maintained in conjunction with others involved in or affected by the work in accordance with the work plan</p> <p>2.4 Reset and/or adjustments required are carried out to ensure equipment operates within requirements in accordance with the work plan</p> <p>2.5 Maintenance and resets/adjustments are carried out mindful of effects on or unnecessary loss of other equipment</p> <p>2.6 Final job inspection is carried out and permits relinquished in accordance with the work plan</p>
3. Complete the work	<p>3.1 Work is completed and appropriate personnel notified in accordance with site/enterprise requirements</p> <p>3.2 Work area is cleared of waste, cleaned, restored and secured in accordance with site/enterprise procedures</p> <p>3.3 Plant, tools and equipment are maintained and stored in accordance with site/enterprise procedures</p> <p>3.4 Work completion details are finalized in accordance with site/enterprise procedures</p>

Variable	Range
Materials may include:	<ul style="list-style-type: none"> • masonry anchors • bolts • nuts • washers • screws • rivets • saddles • clips • brackets • solvents • adhesives • insulation tapes • heat shrink sleeving • spiral binding • cable ties • solder • lubricants • oils • greases • sealants • lugs • connectors • terminal blocks • cable markers and • identification labels

Components may include	<ul style="list-style-type: none"> • fuses/circuit breakers • earth leakage breakers • timers • contactors • contacts • coils • relays • resistors • ballasts • capacitors • solenoids • overloads • switches • plugs • bus bar • cable • fans • thermostats • elements • seals • motor bearings and • brush gear
Isolations	<p>Can refer to:</p> <ul style="list-style-type: none"> • electrical/mechanical or other associated processes
Equipment may include:	<ul style="list-style-type: none"> • AC motors alternators • DC motors generators • pumps • electro/mechanical motor starters • low voltage transformers/switchgear and associated control panels • motor operated valves • hoists and cranes • arc welders • resistive heaters • hot water units • exhaust fans • luminaries • batteries • metal detectors • general low voltage lighting • power circuits • control/indication and alarm circuits • electrical tools/appliances • workshop machinery and • compressors
Work site environment	<p>May be affected by:</p> <ul style="list-style-type: none"> • nearby plant or processes e.g. heat noise dust oil water and chemical
Work completion details	<p>May include:</p> <ul style="list-style-type: none"> • plant and maintenance records • job cards • check sheets and • on device labeling updates

Evidence Guide	
Critical Aspects of Competence	<p>The knowledge and application of relevant sections of:</p> <ul style="list-style-type: none"> • Occupational health and safety legislation • Statutory legislation • Enterprise/site safety procedures • Enterprise/site emergency procedures • Attainment of electrical license deeming competence associated with electrical work • Preparation and planning of work • Installation techniques and procedures • Completion of work procedures
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of :</p> <ul style="list-style-type: none"> • Occupational health and safety standards • Relevant statutory requirements and codes of practice • Relevant Ethiopian Standards • Equipment and material required to perform the work • Isolation procedures Layout of plant/work site and operation of its equipment • Maintenance techniques for the equipment • Electrical equipment • Regulatory requirements • Electrical principles • Test and measurement instruments • Electrical installation practice • Circuit plan appreciation • Engineering and workshop practice • Communication principles
Underpinning Skills	<p>Demonstrates skills to :</p> <ul style="list-style-type: none"> • Apply occupational health and safety standards • Follow relevant statutory regulations and codes of practice • Apply relevant Ethiopian Standards • Use plant drawings and text • Use tools and equipment • Use test and measurement instruments • Use maintenance procedures • Identify and select materials • Apply regulatory procedures • Carry out work completion details • Apply electrical principles

	<ul style="list-style-type: none"> • Communicate effectively • Apply data analysis techniques and tools.
Resource Implications	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> • Access to relevant workplace documentation financial records and equipment
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation/Demonstration with Oral questioning
Context for Assessment	<p>Competence may be assessed in the workplace or in a simulated work environment</p>

Occupational Standard: Power Generation and Substation Operation and Maintenance Support Level II	
Unit Title	Perform Plant Lubrication
Unit Code	EIS PGS2 06 0612
Unit Descriptor	This unit covers the skills and knowledge required to maintain grease oil levels and quality in all areas of plant.

Elements	Performance Criteria
1. Plan and prepare	<p>1.1 Safety issues are identified to comply with enterprise/site requirements</p> <p>1.2 Work requirements are identified from relevant personnel and documentation</p> <p>1.3 Documentation to determine plant status is assessed and evaluated</p> <p>1.4 Isolation of plant is arranged where applicable in accordance with enterprise/site procedures</p> <p>1.5 Tools and lubricants are acquired as required in accordance with enterprise/site procedures</p> <p>1.6 Where appropriate the teams and individuals roles and responsibilities within the team are identified and where required assist in the provision of the on-the-job training</p>
2. Perform routine checks	<p>2.1 Plant is checked in accordance with enterprise/site procedures</p> <p>2.2 Abnormal lubricating and plant conditions are identified.</p> <p>2.3 Appropriate personnel are informed of abnormal conditions</p>
3. Lubricate plant	<p>3.1 Plant to be lubricated is cleaned before work is carried out</p> <p>3.2 Plant is lubricated in accordance with manufacturers and enterprise/site procedures</p> <p>3.3 Plant is left in a condition that ensures safety to personnel and plant integrity</p> <p>3.4 Documentation is updated and plant problems movements abnormalities and status are reported and logged in accordance with enterprise/site procedures</p>

Variable	Range
Safety standards	<p>May include but not limited to:</p> <ul style="list-style-type: none"> Relevant sections of Occupational Health and Safety legislation enterprise safety rules, relevant Regional and federal legislation and national standards for plant.
Information and documentation sources	<p>May include but not limited to:</p> <ul style="list-style-type: none"> Verbal and written communications, enterprise/site safety rules documentation/form(s), equipment and alarm manuals, dedicated computer equipment, enterprise/site standing and operating instructions, enterprise/site log book and manufacturer's operation and maintenance manuals.
Systems plant and/or equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> Plant may be any plant within a power station. Lubricants include any approved for use by the enterprise
Appropriate personnel	<p>May include but not limited to:</p> <ul style="list-style-type: none"> Supervisor/team leader or equivalent, technical and engineering officers or equivalent, contractor staff, maintenance staff and power plant operations personnel

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge in:</p> <ul style="list-style-type: none"> Knowledge and application of relevant sections of: Occupational health and safety legislation Statutory legislation Enterprise/site safety procedures Enterprise/site emergency procedures The preparation and planning of work Knowledge of the types of lubricants and their application Lubricating procedures Dealing with an unplanned event by drawing on essential knowledge and skills to provide appropriate solutions
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> relevant occupational health and safety regulations relevant statutory legislation, relevant enterprise/site safety procedures and environmental legislation enterprise/site emergency procedures and techniques relevant plant and equipment, its location and operating parameters plant status enterprise recording procedures communication principles Material handling procedures