

Title: **REPLACEMENT OF POLE
MOUNTED TRANSFORMER**

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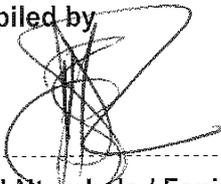
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Compiled by



David Ntombela / Fanie De
Bruin

Consultant / Senior
Supervisor

Date:

19/04/2017

Approved by



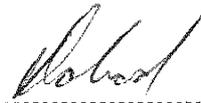
Archie Jaykaran

Middel Manager Technical

Date:

03/05/17

Authorized by



Danie Odendaal

General Manager Asset
Manager (Acting)

Date:

8/5/17

Supported by SCOT/SC



Archie Jaykaran

SCOT/SC Chairperson

Date:

03/05/17

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1. Introduction

The document was compiled to conform or aligns with NRS 082 in ensuring that equipment in our network are maintained and to ensure that OHSAct requirements are met.

The Task Manual has replaced the Work instructions within the Distribution Division. This has been done to assist the end users of these documents and the following is important to note:

- The contents of a Task Manual are always linked to the requirements of one or more Job Plans. In many instances only selected paragraphs / sections of the Task Manual will apply to a specific Job Plan.
- Task Manuals also form the main content of the training module for the task and therefore only people who have attended the training and assessed as competent should be assigned the task as described in the Task Manual.

This Task Manual was compiled from the **analysis** that was done on **critical tasks** that are being performed when maintaining or replacing the network equipment. The associated **risks and hazards** are identified so that they could be **addressed or remedied**.

2. Supporting clauses

2.1 Scope

2.1.1 Purpose

The purpose of this document is to provide persons performing “REPLACEMENT OF POLE MOUNTED TRANSFORMER” with a step by step description of how to do the task, including the most critical hazards and technical specifications associated with the task.

2.1.2 Applicability

This Task manual is applicable to persons carrying out the “REPLACEMENT OF POLE MOUNTED TRANSFORMERS” in Eskom Holdings (Pty) Limited, it's divisions or Eskom wholly owned subsidiaries.

2.2 Normative/informative references

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

- [1] Occupational Health and Safety Act and Regulations (OHSAct);
- [2] ISO 9001, Quality Management Systems;
- [3] 240-114967625: Operating Regulations for High Voltage Systems;
- [4] 240-75661431: Mineral Insulating Oils (Uninhibited And Inhibited) Part 1: Purchase, Management, Maintenance And Testing Eskom Latest
- [5] EPL_32-727: Safety, Health, Environment, And Quality (SHEQ) Policy;
- [6] 240-120054284: Personal Protective Equipment Standard.
- [7] 240-44175132: Eskom Personal Protective Equipment Specification,
- [8] DST_34-1462: Care, Use, Inspection And Maintenance Of Conductive And Non-Conductive Ladders;
- [9] DPC_34-227: Pre-Task Planning and feedback process;
- [10] 240-120804300: Standard for the labelling of Electrical Equipment within Eskom Wires Networks;

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- [11] DMN_34-2208: Access to work sites;
- [12] DPC_34-380: Identifying, Analysing, Documenting and observing dangerous/hazardous tasks;
- [13] 240-86100853: Standard for Barricading Prohibited Area and Live Chamber;
- [14] DST_34-1441: Routine line inspection and maintenance of Reticulation lines;
- [15] 240-69125290: Standard For The Use Of Equipotential Earth Footplates;
- [16] 240-78692652: The Procedure for Use and Maintenance of Portable Earthing Gear;
- [17] DST_34-658: The Use Care Maintenance and Testing of High Voltage Operating Sticks;
- [18] DISPVABI7: The Procedure for Manual Handling of Rural Line Poles;
- [19] DISSCABA2: Specification for a Fall Arrest System;
- [20] 240-43848327: Employees' Right of Refusal to Work in an Unsafe Situation Procedure;
- [21] DST_34-334: "Distribution specification part 11: maintenance inspection and supplemental treatment of treated wood utility Poles;
- [22] D-DT-0330; LV and MV Reticulation pole foundation arrangement;
- [23] DGL_34-256 Scheduling of driving activities;
- [24] DST_34-1150: Lifting machine operators training;
- [25] DST_34-1954: Supervision of people in electrically hazardous locations;
- [26] D-DT-0332: MV / LV Reticulation pole planting depth details;
- [27] 03TI-016: Prohibition Notice: "Changing, replacing or erecting transformer, transformer beds (pole mounted transformers) unless overhead lines will be declared dead (See 5.03.6.3 HV regulations and Section 8(2)(h))". Informative references;
- [28] D-DT-0332; LV and MV Reticulation pole planting depth details; and
- [29] Manufacturers manual.

2.2.2 Informative References

- [30] DST_34-408: Rev 0 Distribution driver and operator assessment and training,
- [31] CATO 010: Safe Use Of Work From Heights System,
- [32] CDP TO 087: Module for equipotential earthing,;
- [33] DPC_34-04: Rev 3, Procedure For The Preparation And Administration Of Distribution Standards
- [34] 240-70413713: Rev 0, Assessment Procedure for HV Authorisation;
- [35] EPC_32-247: Rev 0, Procedure for Vegetation Clearance and Maintenance within Overhead Power Line Servitudes and on Eskom Owned Land;
- [36] EPC_32-93 Vehicle and driver safety management
- [37] EPC_32 829 Wildlife interaction guideline (draft)
- [38] DGL_34-190: Rev 0, Access to Farms (includes Strategy on dealing with game farms); and
- [39] EPC_32-418: Rev 0, Working AT Heights.

2.3 Definitions

2.3.1 General

All definitions listed in recognised industry glossaries such as NRS 000, ORHVS and IEV are applicable.

Definition	Description
Dangerous/ hazardous task	A specific element of work, which has produced and/or which possesses the potential to produce major loss or harm to people, assets, processes/production and/or the environment when performed properly.
Directive	A document which sets out a management objective, the appropriate policy if deemed necessary, as well as the functional accountability for activities to achieve that objective and the interface between functions affected by, or responsible for the execution of, such activities.
Risk assessment	This process involves the combined functions of hazards identification, risk analysis, risk evaluation, determining the risk control strategy/strategies and the identification of the risk control measures that will be implemented during the task execution.
Task analysis	The systematic examination of all dangerous/hazardous tasks (work) in order to identify and quantify all the potential and existing inherent hazards to which employees are exposed while the tasks are being executed.
Note: Only persons who have satisfied the designated person on terms of the Occupational Health and Safety Act (Act 85 of 1993) (General Machinery Regulation 2(1)) that their knowledge is adequate to perform specific duties on specified plant and that their knowledge of these regulations is sufficient may be authorised.	

2.3.2 Disclosure classification

Controlled disclosure: controlled disclosure to external parties (either enforced by law, or discretionary).

2.4 Abbreviations

Abbreviation	Description
CO	Construction Official
HV	High Voltage
OHSAct	Occupational Health and Safety Act
ORHVS	Operating Regulation For High Voltage Systems
PCO	Principal Construction Official
PPE	Personal protective equipment
PTO	Principal Technical Official
SCO	Senior Construction Official
STO	Senior Technical Official
TCO	Technical Construction Official
TO	Technical Official
TSU	Technical Service Unit
VMC	Vehicle Mounted Crane

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2.5 Roles and responsibilities

The designated person or his delegate shall ensure that this procedure is implemented and adhered to. The authorised / responsible person is responsible for the safe execution of all work and activities as set out in this procedure.

2.5.1 Plant Managers shall be responsible for:

- a) Ensuring that equipment job plans are available and issued for specific network maintenance;
- b) Ensuring that the maintenance feedback information / data which is captured and recorded into the system are evaluated / analysed for future maintenance planning.
- c) Ensuring that the maintenance feedback information captured into the maintenance management system is evaluated / analysed and a follow-up ie. WOs are done / generated where required.

2.5.2 Sector Manager shall be responsible for:

- a) Ensuring that staff carrying out network maintenance / construction tasks is trained, competent and authorized to perform the specific task i.e. " Replacement Of Pole Mounted Transformer"
- b) Ensuring that this task manual is implemented and adhered to during network maintenance / construction;
- c) Ensuring that the network maintenance / update feedback information / data is captured and recorded into the system for future maintenance planning: and

2.6 Process for monitoring

Document number	Document title
240-41836800	Process Control Manual (PCM) for Establish Maintenance Objectives, Standards and Procedures (wires)
DPC_34-04	Procedure For Management Of Technical Documents For SCOT.

2.7 Related/supporting documents

Document number	Document title
-	Operating vehicle mounted crane with or without a bucket
-	Training module

3. Requirements

3.1 Pre-job Planning

3.1.1 Materials

- a) Jumpers material;
- b) Lugs (LV & HV) where required;
- c) Earthing wire;
- d) Cable ties.

3.1.2 Tools and equipment

- a) Standard tool set;

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- b) Earth Resistance tester;
- c) Voltage tester;
- d) Lifting equipment ie. VMC, Tirfor, lever hoist, block & tackle etc.;
- e) Approved Slings (Correct SWL);
- f) Pick & Shovels;
- g) Guide ropes;
- h) Ladders;
- i) Skids;
- j) Snatch Blocks.

3.1.3 Personal Protective Equipment

All personal protective equipment shall be in accordance with DST_34-1710.

3.2 Safety and Preparation

Note 1: Ensure that the resources / staff allocated this task have a good knowledge of the area, environment and the equipment they are to use.

Note 2: In planning / making arrangements for this Job ensure that a proper stakeholders meeting is held to share the plan and how it is going to be executed.

- a) Identify the apparatus to be replaced.
- b) Plan the work to be carried out and the resources i.e. material, people required for the safe execution of the task.
- c) Ensure that informal settlement / dwellers / land owners and local authorities are notified about the project / work and the dates.
- d) Identify all other crossings i.e. other services / local authorities, structures in close proximity etc.
- e) Ensure that a stake holders meeting is held and project plan is discussed.
- f) Do an assessment at the site to determine the scope of work and the resources that would be required i.e.
 - People, equipment, PPE.
 - Determine the cause of loss, upgrade/down grade, cable fault e.t.c
 - Assess/identify the specific resources which include:
 - Traffic signs
 - Red flags
 - Road cones
 - Amber rotating lights
 - Vehicles / Workmen ahead traffic signs
 - Reflective vests / bibs
 - Suitable barricading device.
 - Determine a strategy to control members of the public
 - Notifications of proposed work to:
 - Traffic
 - Land owner/s
 - Determine a strategy to control members of the public

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- Confirm with traffic department if they will control the traffic at the work site

- g) If traffic officers will be on site to control the traffic determine and document traffic control measures that will be implemented. Ensure that all parties involved sign the traffic

Note 3: Where there is a lack of knowledge on the area, environment, equipment, etc special care should be taken when performing the pre-task planning

3.2.1 Transformer Isolation

- a) Ensure that the transformer is isolated, earthed and handed over (work permit where required) in accordance with EPC_32-846, if the line is not isolated and earthed the requirements of the technical instruction 03TI-016 shall be adhered to when installing the pole mounted Transformer.

Note 1: When replacing a damaged pole mounted Transformer ensure that the height of the new Transformer is taken into consideration so not encroach into the safe clearance.

- b) On site: Apply equipotential working earths in accordance with organisational standard EPC_32-846.

Note 2: All steps as identified in analysis of HV Operating are applicable

Note 3: Ensure that poor visibility due to insufficient light/lighting are addressed during the task execution

- c) Inspect the pole mounted transformer installation for rotten / cracked pole / s and cross arm / s.

3.2.2 On-site Risk Assessment

- a) Perform a proper risk assessment before task commencement or continuously during task execution in accordance with the prescribed procedure.

Note 1: When doing an on-site risk assessment and executing the task the following hazards must be addressed:

- b) Do not take short cuts to save time
- c) Ensure that poor visibility due to insufficient light/lighting are addressed during the task execution
- d) Lack of proper communicating ability – language, instructions, signals, etc
- e) Failure to correctly identify the critical existing hazards/risks
- f) Failure to minimize identified critical risks
- g) Ensure that the appropriate PPE and safety equipment are identified, inspected and worn/used during execution of the task
- h) Develop measures to mitigate danger that can be caused by tools, equipment and material falling to below /ground.
- i) Manage the vegetation as per the document “management and maintenance within Eskom land, servitudes and right of way” (240-70172585).
- j) Ensure that Oil Spills are reported and the contaminated area is treated as per EPL_32-727 and ESP_240-75661431.
- k) Ensure that phase rotation of installation is established before switching the customer supply OFF for transformer replacement (where possible) and switching ON after the replacement/repairs.

3.3 Work Execution

3.3.1 Removal of Defective Pole Mounted Transformer

3.3.1.1 Scenario 1: Removal of Old / Defective Pole Transformer Using Crane

Note 1: Presence of public at work site may be hazardous to workers and public (material failure).

Note 2: Not testing poles before positioning ladders against poles may result in pole breaking off if rotten/ damaged / vandalised.

Note 3: All steps as identified in analysis of “work with/on extension/single ladders” and “operate a vehicle mounted crane / aerial device” are applicable.

Note 4: Eliminate the use of climbing shoes on a structure with a cable installed.

Note 5: If work is to perform near live apparatus and it is in close proximity, work must be carried out as defined in the ORHVS

a) Position and secure ladder or position the aerial device or a crane with a bucket attached.

Note 6: Tools, equipment and material falling from above may cause injuries to personnel and damage to equipment at ground level.

b) Place tools and equipment (snatch block and rope) in the pouch.

Note 7: Whenever there is a possibility of inadvertent encroachment into the minimum safe working clearances, the person to do the work should be supervised by an authorised person as stated in ORHVS (5.03.6.3).

c) Climb ladder or raise the aerial device/vehicle mounted crane with bucket to reach working position (fall arrest system must be used according to DST_34-1131).

d) Disconnect the transformer primary and secondary electrical connections.

e) Secure / attach approved slings onto the transformer.

Note 8: If the crane operator cannot observe the work to be performed, the assistant must guide him using hand signals

f) Hook up crane and take up the sling slack and ensure that it is not tensioned.

g) Loosen and remove the transformer mounting bolts and nuts.

h) Communicate with the crane operator to lift the transformer off the transformer bed.

i) Guide transformer free from structure.

j) Lower transformer to ground level.

k) Check if Transformer info corresponds with record.

3.3.1.2 Scenario 2: Removal of Old / Defective Pole Transformer Manually

a) Check the condition of installation.

b) Place tools and equipment (snatch block and rope) in the pouch.

c) Use the ladder to ascend the structure.

d) Disconnect transformer primary and secondary electrical connections.

e) Ensure that the Cross arm or A-frame strain to be used for lifting the transformer is in good condition.

f) Attach the lifting equipment above the transformer ie. Cross arm, A-frame strain etc.

g) Where applicable attach the snatch block at the bottom of the pole.

h) Secure / attach the slings onto the transformer and hook it up onto the lifting equipment.

i) Attach the guide ropes on the transformer.

j) Pull the pulling rope to take up slack on the sling and hold.

k) Loosen and remove the transformer mounting bolts and nuts.

l) Hoist the transformer slightly from the transformer bed / mounting bracket.

m) Guide transformer free from structure using guide rope.

n) Lower transformer to ground level.

o) Check if Transformer info corresponds with records.

3.3.1.3 Scenario 3: Removal of Old / Defective Pole Transformer Manually_Wire Winch (Turfor)

Note: This scenario / method is mostly used where access to transformer installations is inaccessible.

- a) Check the condition of the installation.
- b) Place tools and equipment safely the ground sheet.
- c) Use the ladder to ascend the structure.
- d) Disconnect transformer primary and secondary electrical connections.
- e) Ensure that the pole, structure, cross arm, cradle, A-frame and strain are in good condition.
- f) Ensure that the lifting and the pulling equipment are of the correct safe work load to withstand / carry the load.
- g) Attach the lifting equipment (pulley / snatch blocks) above the transformer ie. Cross arm, A-frame / strain etc.

Note: When applying the slings, lifting or pulling equipment ensure that they are located / placed / applied at the correct position or point on the structure to minimise risks.

- h) Attach the pulling equipment at the bottom of the pole / structure.
- i) Secure / attach the slings onto the transformer lifting lug / point and hook it up onto the lifting equipment.
- j) Secure the wire winch on the ground to an anchor point that can take the load.
- k) Ensure that the wire winch is on neutral position.
- l) Feed the wire winch rope through the pulley system and attach to the transformer.
- m) Ensure that the wire winch is in ready position.
- n) Attach the guide ropes on the transformer.
- o) Pull the pulling rope to take up slack / load on the sling and hold.
- p) Loosen and remove the transformer mounting bolts and nuts.
- q) Hoist the transformer slightly from the transformer bed / mounting bracket / cradle.
- r) Disassemble the transformer bed / mounting bracket / cradle as required for each instance to create space for lowering the transformer.
- s) Lower transformer to ground level and guide it from structure with the guide rope.
- t) Check if Transformer info corresponds with records.

3.3.2 Installing New Transformer Using Crane / Manually

Note 1: TSUs are required to test (insulation tester) on transformers between windings and down to earth, from winding to the tank before and after installation to ensure correct voltages before customer supply is restored.

Note 2: Earth Continuity test to be carried out to ensure MV & LV Crow's feet / earth electrodes are making good contact to the mass of earth.

Note 3: Poor visibility due to insufficient light/lighting.

Note 4: All steps as identified in analysis of work with / on extension / single ladders are applicable.

Note 5: All steps as identified in analysis of operate a vehicle mounted crane / aerial device are applicable where a crane is used

- a) Ensure that kVA, kV, Phases, are the same as the transformer being removed.
- b) Record transformer name plate information on in / out commissioning sheet.
- c) Set the tap setting (voltage) the same as the previous transformer and lock it.
- d) Visually inspect the transformer and tick / record the defect on the feedback sheet.

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- e) Perform insulation test on transformer and record the readings.
- f) Check correct rating of Lightning Arrestors.
- g) Ensure that the Panel is still Open Isolated and Earthed.
- h) Ensure that Drop Out Fuse Units are installed correctly and are in a good working order.
- i) Check MV fuse rating to be correct.
- j) Secure the slings onto the transformer.
- k) Hook up crane or manual lifting equipment and take up slack.

Note 6: Tools, equipment and material falling from above may cause injuries to personnel and damage to equipment at ground level.

Note 7: Ensure that the installation adhere to Minimum Safe Work Clearances, and if not, Open, Isolate, Earth and hand Out installation to Authorised Person.

Note 8: Ensure that vertical jumpers pose no risk, (difficult to apply snap-on clamp on vertical conductors) when applying Equipotential Earthing, on Transformer.

- l) Lift the transformer with guiding ropes attached to the transformer bed / mounting bracket / cradle.
- m) Guide transformer into position.
- n) Insert and secure transformer mounting bolts (after assembling the transformer bed / mounting bracket / cradle where required).
- o) Reconnect transformer primary and secondary electrical connections (ensure that phasing is correct) and ensure that they are properly secured.
- p) Connect Neutral and MV Arrestors and tighten the connections.

3.3.3 Test transformer installation

Note 1: Poor visibility due to insufficient light/lighting

Note 2: Damage to equipment if earth resistance is not within specifications

- a) Inspect installation to ensure that installation is in accordance with specifications.
- b) Remove all tools and equipment from work place and descent to ground level or lower the aerial device/vehicle mounted crane with bucket to ground level.
- c) Remove ladder/s, aerial device or vehicle mounted crane from pole.
- d) Perform earth electrode resistance test and record readings
- e) Check all earths to be in a good condition and connected as per Earthing Standard (DST_34-1985).

3.3.4 Earth electrode resistance measurement

- a) Inspect the measuring instrument, leads and probes for general damages.
- b) Ensure that the measuring instrument is calibrated and it is labelled (Sticker) as such.
- c) Establish the physical layout of the earthing system and type of electrodes being used, for example a three point star configuration.
- d) Disconnect the earth electrode from the earthed equipment (if connected), preferably at the point where the wire from the equipment connects to the earth electrode.

Note 1: Dangers associated with disconnecting the earth electrode shall be noted and precautionary measures shall be taken when disconnecting the earth electrode.

- e) Identify the position of the current probe C2.

Note 2: The measurement shall be taken away from the line of any known trench earth, metallic pipe or underground cables.

- f) The distance between the electrode under test and the current probe C2 shall be five times the length of the longest earth rod, the longest horizontal length or the longest diagonal of the earthing system but not less than 50 m. For standardization purposes it is proposed that a distance of 100 m be used.
- g) Set the potential probe P2 in line with the tested electrode and the current probe C2 at a distance equal to 0,618 of the distance to the current probe.
- h) Water the area around the current probe C2 to reduce its resistance.

Note 3: High probe resistance reduces the amount of current that the test set can inject into the soil.

- i) Connect the earth tester terminals C1 and P1 to the tested electrode, terminal P2 to the potential probes P2 and the terminal C2 to the current probe C2.
- j) Operate the earth tester and obtain the resistance reading, by the 61,8% method, this reading is the resistance of the electrode under test.
- k) The result obtained in "3.3.7j" shall be verified using the following procedure (known as the four potential method):
 - With the current probes set up as before, measure the resistance with the potential electrode P2 set up at the distances: 0,2; 0,4; 0,5; 0,6; 0,7; and 0,8 of the distance to the current electrode;
 - The values obtained by measurement at the six positions (designated R1 to R6) shall be tabulated.
- l) The results shall be tabulated as shown under section "Earth electrode resistance measurement" section in DST_34-1985.
- m) Reconnect the earth electrode to the earthed equipment earthing.

3.3.5 Soil Resistivity Test (Where required)

Note 1: The soil resistivity survey shall be carried out when a new network is to be installed.

- a) Inspect the measuring instrument, leads and probes for general damages.
- b) Ensure that the measuring instrument is calibrated and it is labelled (Sticker) as such.
- c) Drive four test probes into the soil in a straight line at equal distances (as per DST_34-1985) and to a depth of not more than 10 % of the distance between probes.
- d) Connect all the test leads to the measuring instrument, connect C1& C2 leads onto the outer probes and connect P1 lead on the second probe from C1 and P2 lead on the third probe from C1.
- e) Operate the measuring instrument and record / capture the resistance reading (R) in the provided sheet.
- f) Carry out earth resistance measurement at wider distances as stated below and ensure that the centre position of the spike system is kept constant whilst probes spacing is increased. The recommended distances for the spaces between probes are:
 - 1 m;
 - 2 m;
 - 3 m;
 - 5 m;
 - 10 m; and
 - 15 m.
- g) The results shall be tabulated as shown as the table under "Soil Resistivity Test" section in DST_34-1985.

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Note 2: The detailed soil resistivity measuring procedure and Soil resistivity survey form are found in the "Earth Standard (DST_34-1985)".

3.3.6 Re-energizing

Note 1: All steps as identified in analysis of HV Operating are applicable.

Note 2: Ensure that all working earth are removed before energizing the plant.

Note 3: Poor visibility due to insufficient light/lighting

- a) Ensure that plant is handed back in accordance with EPC_32-846 where required.
- b) Ensure that the LV Circuit Breakers is open.
- c) Ensure all LV connections in metering cubicle are tightened and safe.
- d) Ensure that all earths are removed from the transformer.
- e) Close Drop Out Fuses thereby energising the transformer.
- f) Test voltage inside metering cubicle to be present and correct (Phase to Phase and Phase to Neutral).
- g) Check phase rotation to be standard (Clock-wise) if new installation.
- h) If transformer is replaced due to faulty unit and phase rotation not available, check rotation of 3 phase equipment at customer.

3.3.7 Voltage and Phase Rotation Test

Note 1: Poor visibility due to insufficient light/lighting

Note 2: Over or under voltage due to incorrect tap setting (voltage) or incorrect phase rotation (if three phase circuit) may cause damage to customer electrical equipment.

Note 3: Whenever there is a possibility of inadvertent encroachment into the minimum safe working clearances, the person to do the testing should be supervised by an authorised person (ORHVS 5.03.6.3).

- a) Measure voltage (LV side) between phases at the top of the circuit breaker or fuses, between neutral and phases, and record readings.
- b) Ensure that the voltage readings are 400 V \pm 10%, between phases and 230V \pm 10%, phase to Neutral.
- c) Close circuit breaker/LV device and where the voltage is not within specified limits, start fault finding
- d) Where the tap operation has to be performed to regulate voltage, and there is a risk of encroaching on the safety clearance, then the line has to be switched off, Isolated and Earthed and the line be Handed Out totally.
- e) Confirm or establish phase rotation with customer where necessary.
- f) Check full-load readings and record, where necessary

3.3.8 Task Wrap Up

- a) Remove all personnel, equipment and redundant material from the site
- b) Complete and submit the required documentation

4. Related / Supporting Documents

4.1 Related Documents

- a) Specifications;
- b) Replacement of Pole mounted transformer;

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- c) Operating vehicle mounted crane with or without a bucket;
- d) Critical task analysis; and
- e) Training module.

4.2 Forms and Records

The completed report shall be returned to the Work Management Centre together with the work order via Work co-ordinator.

The completed reports / forms must be returned to respective departments for record keeping.

- a) Works order.
- b) Operating Instruction form / Workers register / Permit.
- c) Risk Assessment.
- d) In / Out commission sheet / Stores return.

Note 1: Clean work area at the completion of the job – because leaving off-cuts and material may result in injuries to the public/livestock and damage to the image of Eskom.

5. Authorization

This document has been seen and accepted by:

Name and surname	Designation
Danie Odendaal	General Manager Plant Engineering
Colin Smith	Design Base Maintenance Manager
Archie Jaykaran	SCOT/SC Chairperson
Solly Matebula	Specialized and Maintenance Manager (GOU)
Reggie Moleko	Specialized and Maintenance Manager (FS OU)
Lumka Godlwana	Technical Support Manager (LOU)
Ian Mcfadden	Technical Support Manager (KZN OU)
Rodney Pretorius	Technical Support Manager (NW OU)
Nolan Ockhuis	Technical Support Manager (WC OU)
Ellie Mabaso	Technical Support Manager (NC OU)
Nomkhosi Zondo	Technical Support Manager (MOU)
Lindani Mbhele	Technical Support Manager (EC OU)
Cheryl Tanga	Technical Support Manager (FS OU)
Mphathutshedzeni Mudau	Technical Support Manager (G OU)

6. Revisions

This revision of 240-77090525 cancels and replaces revision no 0 of task manual number DMN_34-94.

Date	Rev	Compiler	Remarks
May 2017	2	F De Bruin & DM Ntombela	Added Plant Isolation section Added scenario 3 "Removal of Old / Defective Pole Transformer Manually_Wire Winch (Turfor)". Updated documents references
Nov 2014	1	F De Bruin & DM Ntombela	Reviewed, Registered and published the document as 240-77090525
Oct 2009	1	David Ntombela / Komape Moloto	Document published as DWN_34-94
Oct 2008	0A	David Ntombela / Komape Moloto	Changed the format, the document type, the requirements from the value chain process and changed numbering. Added Key words and Bibliography Sections, revised the body content and introduced Foreword section. Revised 1.2,Applicability section Added more Normative references in section 2 (Introduced 4.3.2j) and k). Introduced notes 1, 2, 7, 8 and 9, lines [a)-d), f)-i) and p)] under 4.3.5 Introduced line 4.3.6e). Introduced note 2, lines 4.3.7b)-h). Introduced the whole 4.3.8 section.
Jan 2006	0	WC Dick	Original issues as DWN_34-94

7. Development team

The following people were involved in reviewing this document:

Name	Designation	Department/OU
D M Ntombela	Consultant	PDE DBO
S P de Bruin	Senior Supervisor	NW OU
F van Jaarsveld	Officer Technical Support	KZN OU
D F B Lötter	Officer Technical Support	WC OU
J E van Wyngaard	Officer Technical Support	EC OU
J J B Uys (Chairperson)	Senior Supervisor	FS OU
J J N Steenkamp	Officer Technical Support	G OU
H J Martens	Officer Technical Support	WC OU
P A Pretorius	Officer Technical Support Major Engineering Works	G OU
H C J Nuttall	Senior Supervisor	MP OU

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Name	Designation	Department/OU
P van der Westhuizen	Senior Supervisor	EC OU
P Diedericks	SHE Manager	FS OU
S Delport	SHE Officer	MP OU
P Ramosili	Field Services Engineer	NW OU
M Lakhan	Officer Technical Support	KZN OU
D LeRoux	Officer Technical Support	WC OU

8. Acknowledgements

Not applicable.

Annex A – - Task Observation
(Informative)

	FORM TITLE	OBSERVATION FORM		
	FORM NUMBER	240-77090525	REV DATE	November 2019
	DOCUMENT TITLE	REPLACEMENT OF POLE MOUNTED TRANSFORMER		

1.	<p>OBSERVER'S PARTICULARS</p> <p>Task _____ observer's name: Task _____ observed: _____</p> <p>Section _____ / department: Location: _____</p> <p>Occupation: _____ Is there a procedure / task manual for this task? YES <input type="checkbox"/> NO <input type="checkbox"/></p> <p>Date: _____ Task Manual ref. _ 240-77090525 _____</p> <p>Time _____ with _____ task: Work _____ order _____ no.: _____</p>																								
2.	<p>REASON FOR OBSERVATION</p> <p>Planned: <input type="checkbox"/> Follow-up: <input type="checkbox"/></p> <p>Name of employee being observed: _____</p>																								
3.	<p>TASK OBSERVATION</p> <p>Did employee adhere to the procedure/practice requirements?</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:60%;"></th> <th style="width:10%;">Yes</th> <th style="width:10%;">No</th> <th style="width:10%;">N/A</th> <th style="width:60%;"></th> <th style="width:10%;">Yes</th> <th style="width:10%;">No</th> <th style="width:10%;">N/A</th> </tr> </thead> <tbody> <tr> <td>Preplanning carried out correctly</td> <td></td> <td></td> <td></td> <td>4. Use of correct PPE</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Emergency contacts numbers Obtained</td> <td></td> <td></td> <td></td> <td>5. Ensure that the panel / equipment to be commissioned is isolated and earthed in accordance with EPC_32-846</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Yes	No	N/A		Yes	No	N/A	Preplanning carried out correctly				4. Use of correct PPE				Emergency contacts numbers Obtained				5. Ensure that the panel / equipment to be commissioned is isolated and earthed in accordance with EPC_32-846			
	Yes	No	N/A		Yes	No	N/A																		
Preplanning carried out correctly				4. Use of correct PPE																					
Emergency contacts numbers Obtained				5. Ensure that the panel / equipment to be commissioned is isolated and earthed in accordance with EPC_32-846																					

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Tools equipment:				6. Carry out the task as per task manual 240-77090525			
Used correctly							
In good and safe condition							
Test instrument calibrated							
Toolbox Talk:							
Task manuals used							
Complete Worker's register							
Risk Assessment been done							
Valid work permits available							
Could observed practices / conditions lead to:							
1. Injury:				2. Illness (fumes, gas, etc.)			
Risk of getting caught by				3. Costs (delays)			
Risk of striking against/get struck by				4. Poor quality (non-conformance)			
Risk of fall from same level							
Risk of fall from different level							
Risk of slip, trips and falls							
Risk of electrocution							
4.	NON COMPLIANCE PRACTICE OBSERVATION						
	Yes	No	N/A		Yes	No	N/A
1. Working at unsafe speed				7.Failure to warn			
2. Using unsafe equipment				8. Taking chances			
3. Using equipment unsafely				9. Failure to identify hazards			
4. Unsafe loading, placing & lifting				10.Failure to secure lock-out			

	5. Taking unsafe position				11. Safety signs ignored			
	6. Safety rules ignored							
NOTE: ALL OBSERVED CLASS HAZARDS SHALL REQUIRE IMMEDIATE INTERVENTION								
5.	OBSERVED DEVIATIONS / NON-CONFORMANCES							
6.	RISK BEHAVIOURS							
7.	PROPOSED CONTROLS							
	Compile a procedure for this task			Issue a standing instruction				
	Revise present procedure			Change work methods				
	Retraining of employees			Professional referral				
	Engineering revision			Coaching				
8.	ANALYSIS							
	IAC – inadequate capability		ABU – abuse or misuse / equip / drugs or alcohol		MAIN – inadequate maintenance			
	KNO – lack of knowledge		NAT – natural factors		EQU – inadequate equipment			
	SKI – lack of skill		LEA – inadequate leadership		STA – inadequate work / train Standards			
	STR – stress		ENG – inadequate engineering		WEA – wear & tear			
	MOT – improper motivation		PUR – inadequate purchasing		CON – inadequate control			

9.	DISCUSSION BETWEEN SUPERVISOR/OBSERVER AND EMPLOYEE	
	1. EMPLOYEE EXPLANATION FOR RISK BEHAVIOUR:	
	2. AGREEMENT TO CHANGE AT RISK BEHAVIOUR:	
10.	FOLLOW-UP ACTIONS	WHEN / WHO

Person being Observed signature: _____ Date: _____

Signature (Task Observer): _____ Date: _____

Signature Chairperson Safety Committee: _____ Date: _____
(if deviations were found)