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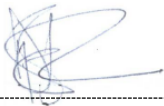
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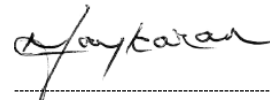
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1. Introduction

This task manual was compiled to conform or align with NRS 082, NRS 090, NRS 090-1-1 and OHSA requirements in ensuring that the equipment in Eskom Distribution network are maintained, the risks and hazards associated with task are minimized or mitigated.

This task manual was compiled from the analysis that was done on critical tasks that are being performed when maintaining network equipment in order to identify risks and hazards associated so that they could be addressed or remedied.

This document states the procedure for Replacement Of Pole Dead End Assembly thereby ensuring that work is performed safely and risks and hazards are minimised.

2. Supporting Clauses

2.1 Scope

2.1.1 Purpose

The purpose of this document is to provide persons performing Replacement Of Pole Dead End Assembly 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 performing Replacement Of Pole Dead End Assembly in Eskom Holdings (Pty) Limited, it's divisions or Eskom wholly owned subsidiaries. This document shall apply throughout Eskom Holdings Limited Divisions.

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] ISO 9001, Quality Management Systems.
- [2] OHSAct, Occupation Health and Safety Act 85 of 1993 and Regulations;
- [3] 240-62196227, Life-saving rules
- [4] 240-114967625, Operating Regulations for High Voltage systems;
- [5] 240-120054284, Personal Protective Equipment Standard;
- [6] 240-86100853, Standard for Barricading Prohibited Area and Live Chamber;
- [7] 240-82744675, Procedure for refusal to work on the grounds of health, safety and environmental concerns;
- [8] 240-77858900, Operating a truck mounted crane with a bucket attach;
- [9] 240-56062752, Medium-Voltage Miniature Substations For Systems With Nominal Voltages Of 11 kV and 22 kV;
- [10] 240-133791951, Maintenance Inspection of Treated Wood Utility Poles Using the Non Destructive and Destructive Testing Method;
- [11] 240-123897174, Standard For The Selection, Care, Use, Inspection And Maintenance Of Conductive And Non-Conductive Ladders;
- [12] 240-86576750, Risk of trip assessment.

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- [13] 240-138196972: Rev 1, Routine line inspection and maintenance of Reticulation lines. Routine Inspection And Maintenance Of Sub-transmission And Distribution Lines;
- [14] 240-78692652: Rev 0, The Procedure for Use and Maintenance of Portable Earthing Gear;
- [15] 240-69125290, Standard for the Use of Equipontential Earth footplates;
- [16] 240-70175091, The Use Care Maintenance and Testing of High Voltage Operating Sticks;
- [17] 240-133791951, Maintenance Inspection of Treated Wood Utility Poles Using the Non Destructive and Destructive Testing Method;
- [18] EPC_32-418, Working AT Heights;
- [19] Specific operating local instruction / procedure; and
- [20] Manufacturer’s manual.

2.2.2 Informative

- [21] DPC_34-04, Procedure For The Preparation And Administration Of Distribution Standards;
- [22] DPC_34-145, Assessment Procedure for HV Authorisation;
- [23] EPC_32-727, Safety, Health Environmental & Quality (SHEQ) policy;
- [24] 240-86100853, Standard For Barricading Prohibited Area And Live Chamber;
- [25] 240-70172585, Vegetation Management and Maintenance Within Eskom Land, Servitudes and Rights of Way; and
- [26] 240-80605256, Access to Farms (includes Strategy on dealing with game farms).

2.3 Definitions

2.3.1 General

All definitions in 240-114967625 ORHVS and OHSAct 85 of 1993 including the following are applicable:

Definition	Description
Authorised	means a person, who has been authorised in terms of these regulations [ORHVS]
Authorise or Authorised	refers to the giving of permission in writing to perform specific duties and responsibilities in terms of these regulations. Authorisation remains valid for a maximum period of three years which is based on divisional requirements [ORHVS]
Operate or Operating	Means switching, linking, safety testing and earthing.
Permit	An exemption permit issued by a Provincial Roads Authority in terms of Article 81 of the National Road Traffic Act, authorising the transportation of an abnormal load or the movement of an abnormal vehicle or a combination of vehicles subject to such terms and conditions and the payment of such fees as may be imposed
Portable earth	This is a portable device used to connect isolated apparatus electrically directly to the general mass of earth in such a manner that it will ensure an immediate safe discharge of electrical energy at all times..
Portable Earthing Gear Set	This is a grouping of 3 individual portable earthing conductors with the same current rating and conductor length.
Step potential	The difference in surface potential experienced by a person bridging a distance of 1 m with his/her feet without contacting any other earthed object.

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Definition	Description
Touch potential	The potential difference between the Grid Potential Rise (GPR) and the surface potential at the point where a person is standing, while at the same time having his/her hands in contact with earthed structure.
Work site	This is a place where workers are busy working (12m radius from the portable electrode). There can be more than one work sites on the same line.
Working earth	A supplementary portable earthing device used on apparatus in such a position that it is visible from and applied as close as possible to the point of work in such a manner that an equipotential zone is created. NOTE: This includes bonding/shunt conductors, induction earths and discharge earths.
Risk Assessment	This process involves the combined functions of hazards identification, risk analysis, risk evaluation, determining the risk control strategy/s and the identification of the risk control measures that will be implemented during the task execution.
Rotten Wooden Pole/unsound pole	A pole that has been rejected after assessment and that shall be replaced. An unsound pole is a class 4 pole or a class 3 pole that will not be stubbed by the region (refer to 240-133791951 for classification of poles).
Task Analysis	The systematic examination of all dangerous/hazardous tasks (work) in order to identify and quantify all the potential and existing inherent hazards that employees are exposed to while the tasks are being executed.
Anchor Point	Any stable object or structure that can provide enough force to pull or stabilise the pole or structure.
<p>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.</p>	

2.3.2 Disclosure Classification

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

2.4 Abbreviations

Abbreviation	Description
CDP	Career Development Programme
CNC	Customer Network Centre
CO	Construction Official
GMR	General Machinery Regulation
JB	Junction Boxes
ORHVS	Operating regulations for high voltage systems
OTS	Officer Technical Support
PCO	Principal Construction Official
PML	Pedestal Mounted Ladder
PPE	Personal Protective Equipment
PTO	Principal Technical Officer

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Abbreviation	Description
SCO	Senior Construction Official
SSTCNC	Senior Supervisor Technical Customer Network Centre.
STO	Senior Technical Officer
TCIF	Technology Change Information Forum
TO	Technical Officer
TSU	Technical Services Unit
WCO	Works-Coordinator

2.5 Roles and responsibilities

2.5.1 Plant Managers shall be responsible for:

- a) Ensuring that equipment job plans are available and issued for specific maintenance.
- b) Ensuring that the maintenance feedback information that is available in the maintenance management system is analysed.

2.5.2 Zone Manager shall be responsible for:

- a) Ensuring that staff carrying out maintenance tasks is trained, competent and authorized to perform maintenance on the specific equipment.
- b) Ensuring that instructions are implemented and adhered to and equipment is maintained in accordance to relevant work instructions.
- c) Ensuring that the maintenance feedback information / data is captured and recorded into the system for future maintenance planning.

2.6 Process for monitoring

Document number	Document title
240-45920887	Process Control Manual (PCM) for Manage Maintenance Base.
DPC_34-04	Procedure For Management Of Technical Documents For SCOT.

2.7 Related/supporting documents

This document referenced 240-129277459 supersedes all the revisions of the document referenced DMN 34_336 Rev 1.

3. Requirements

3.1 Pre-job Planning

- a) Assessment to determine the scope of work and the resources that would be required:
 - People;
 - Equipment;
 - PPE;

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- Tools; and
- Material / Spares

Note 1: If you lack knowledge of the area, environment, equipment, etc. special care should be taken when performing the pre-task planning

- b) Determine the cause of loss, upgrade / down grade, cable fault etc.
- c) Plan work and resources required for the task

3.1.1 Materials

- a) Dead End Assembly;

3.1.2 Tools and Equipment

- a) Standard tool set;
- b) Sling;
- c) Jack - pull lift;
- d) Come a long;
- e) Crane with bucket/ aerial device / ladder;
- f) Pulling device (Kito); and
- g) Earthing equipment.

3.1.3 Personal Protective Equipment

All personal protective equipment shall be in accordance with 240-44175132 and the additional requirements from the on-site assessment of the equipment installation arc flash energy rating. All PPE listed below shall be approved for operating and comply to the identified arc flash energy rating.

- a) Overall;
- b) Hard hat;
- c) Safety boots
- d) Face shield; and
- e) Gloves

3.2 Work Execution

3.2.1 Risk Assessment

Note 1: Ensure that light/lighting is sufficient before the commencement of work.

Note 2: Ensure that task analysis of HV operating, Work With/On Extension/Single Ladders and Operating a vehicle mounted crane with a bucket are also applicable.

Note 3: Ensure proper communication ability – language, instructions, signals, etc.

- a) Ensure that all members of staff are included when performing risk assessment.
- b) Conduct an on-site risk assessment prior to commencement of work and continuous during the task execution by:

Note 4: When doing an on-site risk assessment and executing the task the following hazards must be addressed:

- identify the existing hazards/risks,
- treating, transferring, tolerating or terminating the identified risks.

- ensuring that all workers acknowledge identified risks and hazards by signing risk assessment form / worker's register.
- Do not take short cuts to save time
- Ensure that poor visibility due to insufficient light/lighting are addressed during the task execution
- Maintain proper communication – language, instructions, signals, etc.
- Ensure that appropriate PPE and safety equipment as identified is worn/used during execution of the task after inspection.

3.2.2 Plant Isolation

Note 1: Ensure that poor visibility due to insufficient light/lighting is addressed during the task execution

- a) Ensure that the plant is isolated and earthed and handed over (works permit) where required in accordance with 240-114967625 (ORHVS).
- b) On –site - Apply equipotential working earths in accordance with organisational standards (240-69125290 & 240-78692652).

3.2.3 Inspect and Test the Pole / Structure

Note 1: Before positioning ladder against the pole ensure that the pole is tested for rot, damage, vandalism etc.

- a) Do a visual inspection of hardware and structure to be worked on as well as structures on both sides of the worksite (ground level only).
- b) Test the pole / structure in accordance 240-133791951 before placing the ladder against it or attempting remove the transformer with the crane.
- c) Using anchor ropes to stabilize the pole before placing any ladder by:
 - Installing the anchor points on either sides of the rotten / damaged structure;
 - Attaching two ropes on either sides of the rotten / damaged pole or structure;
 - Regulating and pulling the anchoring ropes to stabilize the rotten / damaged pole or structure;
 - Secure ropes using the operating stick at plus or minus two third of the pole length from ground level: ensure that the safe working clearance is not encroached.

Note 2: Ensure that the people pulling and controlling the ropes are at a distance twice the height of the pole.

Note 3: Ensure that pulling of the pole is done smoothly and no jerking should be allowed, this could lead to clashing of conductors at mid-span.

- d) Apply tension to the ropes to support the pole rotten / damaged pole or structure;
- e) Using a vehicle mounted crane to stabilize the rotten / damaged pole / structure by:
 - Attaching the sling at the bottom / foot of the pole;
 - Hooking the sling to the crane;
 - Guiding the sling upwards along the pole with the crane;
 - Tensioning the sling to stabilize the rotten pole / damaged.
- f) Place the ladder against the pole and secure it.

3.2.4 Removing the Dead End or any other Part of the Hardware

Note 1: In the case of an in-line strainer both sides of the phase has to be secured.

Note 2: Access of public / unauthorized persons to work site must be controlled.

Note 3: Ensure that there is good visibility on site.

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

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Note 5: All steps as identified in analysis of operate a vehicle mounted crane with bucket / aerial device are applicable.

- a) Where the hardware is suspected to be weakened by corrosion or incorrect application of hardware, then the dead end strength should be tested by pulling down the line on both sides.

Note 6: Be aware of tools, equipment and material that could fall.

- b) If the hardware and the structure are sound then position and secure ladder against structure / or position vehicle mounted crane (aerial device).
- c) Place tools and equipment in pouch (snatch block and rope to elevate tools and material).
- d) Climb ladder, using fall arrest system /raise aerial device to the working position according to procedures.
- e) Secure the snatch block.

Note 7: When corrosion of the dead end assembly hardware is visible or the strength of the hardware is suspect steps as in point h) is to be followed but under no circumstances are the pulling eyes to be used.

- f) Starting with the centre phase, first attach sling and pulling device onto cross arm or use a pulling eye.
- g) Attach the other end of the pulling device and grip to the overhead conductor.

Note 8: When taking up tension ensure that the conductor is not over tensioned by having the operation supervised constantly.

- h) Tension the conductor sufficiently to be able to remove the dead end or any other part of the hardware.
- i) Remove the dead end or any other part of the hardware that is damaged.
- j) Where a pole was identified as rotten appropriate measure (e.g. replacing the pole with new one, stabilize the pole by stubbing etc.) must be taken before a new dead end is installed.

3.2.5 Installing the new Dead End or any other Part of the Hardware

Note 1: Incorrect sagging of conductor may lead to clashing of conductors / flashover.

Note 2: Poor visibility due to insufficient light/lighting.

Note 3: All steps as identified in analysis of work with/on extension/single ladders are applicable.

Note 4: All steps as identified in analysis of operate a vehicle mounted crane with bucket / aerial device are applicable.

Note 5: Be aware of falling tools, equipment or material.

Note 6: Where the dead end assembly is installed at a road crossing it must be replaced with a pistol grip assembly as per the standard requirements.

- a) Use a wire brush to clean the contact surface of the conductor to remove any corrosion build up.
- b) Install the new dead end or any other part of the hardware.
- c) Release the tension and remove the pulling device.
- d) Ensure that the sagging & clearances are in accordance with specifications.
- e) Remove and lower all tools and equipment to ground level.
- f) Descend to ground level using the fall arrest system in accordance to procedure when a ladder was used.
- g) Remove the ladder from the pole or lower the aerial device.

3.2.6 Plant Re-Energization

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

Note 2: Poor visibility due to insufficient light/lighting.

- a) Remove, count and record working earths applied (equipotential earths).

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- b) Sign off workers register and clear permit where issued.
- c) Hand the apparatus back to CONTROL.
- d) Re-energised in accordance with 240-114967625 (ORHVS).

3.2.7 Task Wrap Up

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

4. 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

5. Authorization

This document has been seen and accepted by:

Name and surname	Designation
Amelia Mtshali	Senior Manager (DB & OUS)
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Archie Jaykaran	SCOT/SC Chairperson
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6. Revisions

This revision of 240-129277459 cancels and replaces all revisions of 34-95.

Date	Rev	Compiler	Remarks
Aug 2019	2	DM Ntombela	Added section "3.2.3 Inspect and Test the Pole / Structure". And reformatted the template.
March 2018	1	DM Ntombela	Change to new Document Number 240-129277459 And reformatted the template.
Feb 2013	1	PA Pretorius	Included Foreword and revised the Introduction section 2-Revised Normative and informative references 3.5-Removed Implementation Date 3.6-Removed Process for monitoring Reformatted the document Annex A-Replaced the Impact Assessment with new
Nov 2006	0	DM Ntombela	Original issues as DMN_34-95

7. Development Team


The following people were involved in the development of this document:

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8. Acknowledgements

Not applicable.

Annex A – Task Observation
 (Normative)

	FORM TITLE	OBSERVATION FORM		
	FORM NUMBER	240-129277459	REV DATE	April 2022
	DOCUMENT TITLE	Replacement Of Pole Dead End Assembly		

1.	OBSERVER'S PARTICULARS								
	Task observer's name: _____				Task observed: Replacement Of Pole Dead End Assembly				
	Section / department: _____				Location: _____				
	Occupation: _____				Is there a procedure / task manual for this task? YES <input type="checkbox"/> NO <input type="checkbox"/>				
	Date: _____				Task Manual ref. __ 240-129277459 _____				
	Time with task: _____				Work order no.: _____				
2.	REASON FOR OBSERVATION								
	Planned: <input type="checkbox"/>		Follow-up: <input type="checkbox"/>						
	Name of employee being observed: _____								
3.	TASK OBSERVATION								
	Did employee adhere to the procedure/practice requirements?								
		Yes	No	N/A		Yes	No	N/A	
	Preplanning carried out correctly				5. Use of correct PPE				
	Emergency contacts numbers Obtained				6. Ensure that the panel / equipment to be commissioned is isolated and earthed in accordance with 240-129277459				

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Tools equipment:				7. Carry out the task as per task manual (240-129277459)			
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:							
Injury:				Illness (fumes, gas, etc.)			
Risk of getting caught by				Costs (delays)			
Risk of striking against/get struck by				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)