

 Eskom	Task Manual	Technology
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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 MV FUSE UNIT REPLACEMENT 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 a task of MV FUSE UNIT REPLACEMENT 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 a task of MV FUSE UNIT REPLACEMENT 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] 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] EPC_32-727: Rev. 0, Safety, Health Environmental & Quality (SHEQ) policy;
- [7] 240-77858900, Operating a truck mounted crane with a bucket attach;
- [8] 240-44175132, Provision and use of Personal protective equipment;
- [9] 240-133791951, Maintenance Inspection and Supplemental treatment of wood utility poles;
- [10] EPC32-520, Occupational Health & Safety Risk Assessment Procedure;
- [11] 240-125124036, Standard For The Selection, Care, Use, Inspection And Maintenance Of Conductive And Non-Conductive Ladders;
- [12] 240-125121012, Usage Of Extension, Single, "A" Frame Ladders, Two Step Platform Or Pole Climbing Equipment;
- [13] 240-78692652, The Procedure for Use and Maintenance of Portable Earthing Gear;
- [14] 240-69125290, Standard for the Use of Equipontential Earth footplates;

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- [15] 240-82744675, Procedure for refusal to work on the grounds of health, safety and environmental concerns;
- [16] EPC_32-418: Rev 0, Working AT Heights;
- [17] Specific operating local instruction / procedure; and
- [18] Manufacturer's manual.

2.2.2 Informative

- [19] DPC_34-04: Rev 0, Procedure For The Preparation And Administration Of Distribution Standards;

2.3 Definitions

2.3.1 General

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

Definition	Description
Authorised person	means a person, whether an employee or another person, who has been authorised in terms of these regulations
Authorized	A person who is trained and has been proven competent to carry out rotten pole replacement in terms of this standard. This authorization shall be in writing.
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.
Responsible person	means a person, who has been authorised to be responsible for ensuring that the work on the apparatus covered by work permit can be, carried out with safety and within the terms of these regulations
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.
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.
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
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
SCO	Senior Construction Official
SSTCNC	Senior Supervisor Technical Customer Network Centre.
STO	Senior Technical Officer
SWL	Safe Working Load;
TCIF	Technology Change Information Forum
TO	Technical Officer
TSU	Technical Services Unit
WMC	Work Management Centre
WCO	Works-Coordinator
OPS	
FS	

2.5 Roles and responsibilities

2.5.1 Plant / OPS & FS Managers shall be responsible for:

- Ensuring that equipment job plans / task list are available and issued for specific maintenance.
- Ensuring that the maintenance feedback information that is available in the maintenance management system is analysed.

2.5.2 Zone / OPS & FS Manager shall be responsible for:

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

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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 (240-134634269) supersedes DMN_ 34-108.

3. Requirements

3.1 Pre-job Planning

Note 1: Where ladders are to be used ensure that the environmental risks and hazards are taken into consideration.

- a) Do an assessment at the site to determine the scope of work and the resources that would be required (people, equipment, PPE, etc.)
- b) Plan work and resources required for the task.

Note 2: Ladders will mostly be used in conjunction with another task and should therefore be included in the task specific job planning.

Note 3: Work at close proximity must be in accordance with safe working clearances as per 240-114967625 with reference to applicable line voltage

- c) Ensure proper communication between staff.
- d) Where required ensure that vehicle is equipped with the correct ladders for the specific task.
- e) Ensure that the extension / single ladders are inspected in accordance to relevant procedures before use.
- f) Ensure that the ladder is inspected, loaded, off-loaded, transported and used on site as per the requirements of 240-125121012.

3.1.1 Tools and Equipment

- a) Standard tool set;
- b) Earth Resistance tester;
- c) Extension / Single / "A" Frame ladders or VMC; and
- d) FAS

3.1.2 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 with the identified arc flash energy rating.

- a) FAS;
- b) Hard hat;
- c) Safety Boots; and
- d) Gloves

3.2 Work Execution

3.2.1 Plant isolation

- a) No work should commence before line has been handed over (works permit) in accordance with the ORHVS (240-114967625) or authorised person supervising the task has given permission for task commencement
- b) Ensure that the plant is isolated and earthed and where required, handed over (works permit) in accordance with 240-114967625.

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

Note 2: All existing controls as identified in analysis of HV Operating is applicable.

Note 3: All recommendations as identified in analysis of HV Operating is applicable

Note 4: Any identified defects or substandard / unserviceable / incorrect tools, equipment or material shall be corrected / repaired or replaced before using them.

3.2.2 On Site Risk Assessment

Note 1: Ensure good visibility with additional lighting where necessary.

Note 2: Where the ground is uneven beware of slipping and falling.

- 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:
 - Identify the existing hazards/risks;
 - Treat, transfer, tolerate or terminate the identified risks;
 - Ensure that all workers acknowledge identified risks and hazards by signing risk assessment form / worker's register; and
 - Also refer to 32-418 risk assessment section for additional risk factors to consider and manage.
- c) Ensure that a work site the general inspection is carried out as per DMN_34-2208.

3.2.3 Safety and Preparation

- a) Ensure that the apparatus is opened, isolated and earthed, handed over (work permit) in accordance with 240-114967625;
- b) Ensure that at no time will team members be permitted to ascend the poles / structures in any manner whatsoever;
- c) Ensure that the correct Personal Protective Equipment is used at all times;
- d) Where necessary ensure that barricading shall be erected in accordance with 240-86100853 and a correct and adequate supervision is implemented as per 240-86640998;
- e) Check and inspect all protective safety equipment;
- f) The following measures shall be taken / followed before working on any structures:
 - Identify the type of the structures to worked on i.e. wood, steel etc.;
 - Identify the terrain (site) in which the pole is located;
 - Check the lines in the vicinity for low hanging live conductors (i.e. line crossings etc.);
 - Check if the pole has been classified (classification tag);

-
- Check if the pole has been planted at the correct depth as per 240-75883906 and if there is a cable installed on the pole; and
 - Check the stay rod for any indication of extraction from ground.

Note 1: Under no circumstances would the climbing shoes be used when the poles have cables attached.

- g) Inspect and test structure on which the fuse unit is installed for anomalies, as per 240-133791951 in case of wooden poles. Anomalies includes the following:
- Rot on wooden ones;
 - Rusted bolts, columns and braces in case of steel structure;
 - Concrete deterioration on concrete structure; and
 - Damage to the line hardware etc;
- h) Inspect conductor joints on both sides of the affected structure for broken strands, flash marks etc;
- i) Inspect the pole top and all the guy grips for proper assembly and or any damages; and
- j) Inspect the tools and equipment for serviceability prior to use by a competent person before they are used.

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

Note 3: Maintain and ensure that light / lighting is sufficient during task execution.

- k) The damaged structures shall not be used as part of a lifting device unless they are secured.
- l) When the condition and installation of the pole / structures is found to be in order, the intended work may proceed as planned.
- m) Where the pole is suspect the appropriate method shall be implemented to stabilize the pole before working on i.e. using PML, Cherry picker, Ladder, VMC, Support rope or Climbing Shoes.
- n) The responsible person on site will continually supervise, direct and observe all activities.
- o) Work men to be reminded that they have “the right to refuse” if they consider the work to be too dangerous or do not have the correct equipment or skills to safely complete the activity as per 240-82744675.
- p) Responsible and authorized person must ensure that the work site is prepared and made safe as per the 240-114967625 (ORHVS).
- q) Responsible person to sign the permit to work and complete workers register.
- r) On-site apply equipontential earthing in accordance with organisational standards and procedure (240-114967625 / ORHVS), 240-78692652 & 240-69125290.

Note 4: Ensure that the stay rod installation is done in accordance to D-DT-0350, TO-004 & ATO-05.

- s) No work preparation should commence before line has been handed over (works permit) in accordance with the ORHVS (240-114967625) or authorised person supervising the task has given permission for task commencement.

NOTE 5: All steps as identified in analysis of HV Operating are applicable.

NOTE 6: Correct / repair any identified defects or replace the substandard / unserviceable / incorrect tools, equipment or material before performing the task.

3.2.4 Procedure

3.2.4.1 Fuse unit Removal

Note 1: Use correct tools and equipment for the task allocated.

Note 2: Ensure that no workers stand under a person working in elevated position as falling equipment and tools on may cause injury.

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Note 3: Ensure that working earth are recorded in the operating instruction and are removed as per regulations and plant is re-energised in accordance with ORHVS i.e. equipotential earthing.

Note 4: All steps as identified in analyses of working with or on extension / single ladders and operating a vehicle mounted crane is applicable.

Note 5: All steps as identified in analysis of HV Operating are applicable.

- a) Position and secure ladder or bucket and ensure that outriggers are extended if the crane is used.
- b) Place tools and equipment (snatch block and rope) in pouch.
- c) Climb ladder or raise the aerial device to working position and use fall arrest system according to procedures.
- d) Secure snatch block.
- e) Disconnect electrical connections.
- f) Support the fuse unit while loosening and then lower to ground.

3.2.4.2 Install new / replacement fuse unit.

Note 1: Ensure that all phases are replaced with fuse elements of the same rating.

Note 2: Ensure that electrical connections are properly secured (bolting / crimping) – loose connection leads to hot connection etc. and over tightening / crimping leads to weak (physically) connections – breaks off easily.

- a) Secure fuse unit to the snatch block rope.
- b) Lift fuse unit to attachment point and secure.
- c) Clean and grease electrical connections and reconnect the electrical wires.
- d) Inspect installation to ensure that installation is in accordance with the specifications.
- e) Ensure that all three fuse holders are fitted with the correctly rated fuse elements.
- f) Ensure proper operation of fuse carrier and holder.
- g) Remove all tools and equipment and descend to ground level.
- h) Remove ladder from pole or lower aerial device.
- i) Ensure that plant is handed back where required and re-energised in accordance with ORHVS

Note 3: Ensure that all tools and equipment are removed from working position / area when job is completed.

Note 4: Ensure that the installation complies with specifications after the repairs or maintenance.

3.2.5 Task Wrap Up

Note 1: Where required it should be ensured that equipment/conductors are handed back (works permit) where required and re-energised in accordance with 240-114967625.

- a) Remove all personnel, equipment and redundant material from the site.
- b) Clean work site.

4. Related/Supporting Documents

4.1 Related Documents

- a) Critical task analysis (TA-55-06); and
- b) Manufacturer's manual.

4.2 Forms and Records

The completed report / feedback shall be returned to the WMC together with the Work Order via Work co-ordinator and a copy thereof shall be sent to or kept by the Service provider (ie PPM, Contractor).

The data is to be analysed and corrective action initiated where required and this could be in the form of repair, partial refurbishment or replacement.

5. Authorization

This document has been seen and accepted by:

Name and surname	Designation
Prince Moyo	Power Delivery Engineering GM
Colin Smith	Design Base Maintenance Manager
Archie Jaykaran	SCOT/SC Chairperson
Mihla Khumalo	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)
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6. Revisions

This revision of 240-134634269 cancels and replaces all revisions of 34-108.

Date	Rev	Compiler	Remarks
Oct 2018	2	DM Ntombela	240-134634269 reformatted into a new template and updated the following section: Normative/Informative References; Definitions; Abbreviations; Roles and responsibilities; Tools and Equipment; Personal Protective Equipment; Pre-Job Planning; On-Site Risk Assessment; and Worksite Preparation. Included Plant Isolation Section.

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Date	Rev	Compiler	Remarks
Mar 2018	1	A Jaykaran	Stabilized the document and allocated new reference number: 240-134634269
May 2010	1	D M Ntombela / DFB Lötter	Original issues as DMN_34-108.
			Reconstruct section headings and the content
			Added Introduction, Revision History, Keyword and Bibliography
Feb. 2006	0	DFB Lötter	Issued and approved as DMN_34-108

7. Development Team

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

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8. Acknowledgements

The current chairperson and the GMWP care group wishes to acknowledge the former team member below for their contribution in the development of this document

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E Fraser	F S E	North West Region
PA Pretorius	OFS MEW	Central Region
S Spies	O F S	Central Region
T Barnard	SHE Officer	Eastern Region
S Delpont	SHE Officer	North Region

Annex A – Task Observation

(Normative)

	FORM TITLE	OBSERVATION FORM		
	FORM NUMBER	240-134634269	REV DATE	April 2022
	DOCUMENT TITLE	MV FUSE UNIT REPLACEMENT		

1.	OBSERVER'S PARTICULARS							
	Task observer's name: _____				Task observed: MV FUSE UNIT REPLACEMENT			
	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. __ 240-134634269 _____			
	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 240-134634269			

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Tools equipment:				7. Carry out the task as per task manual (240-134634269)			
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: _____
(if deviations were found)

Date: _____