

 Eskom	Standard	Technology
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Title: **SUBSTATION AND FACILITY MAINTENANCE**

Unique Identifier: **240-146353995**

Alternative Reference Number: **41-794**

Area of Applicability: **Engineering**

Next Review Date: **STABILISED**

**COE Acceptance**



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Date: 02/05/2019

**DBOUS Acceptance**



**for Amelia Mtshali**  
**Senior Manager: Design Base &**  
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Date: 19 July 2021

This document is **STABILISED**. The technical content in this document is not expected to change because the document covers: *(Tick applicable motivation)*

1	A specific plant, project or solution	
2	A mature and stable technical area/technology	x
3	Established and accepted practices.	x

Title: **SUBSTATION AND FACILITY MAINTENANCE**

Unique Identifier: **TST41-794**

Document Type: **STANDARD**

Revision: **0**

Effective date: **June 2008**

Total pages: **7**

Revision date: **May 2014**

**COMPILED BY**

**FUNCTIONAL RESP.**

**AUTHORIZED BY**

  
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## 1. Introduction

A standardised format and uniform approach is required for the maintenance activities for Transmission substation equipment, facilities and property.

## 2. Supporting Clauses

### 2.1 Scope

This standard sets out the minimum maintenance activities required for substation equipment, facilities and property within the substation.

#### 2.1.1 Purpose

The purpose of this standard is to standardise the minimum requirements for Substation Maintenance.

Substation maintenance must be done at least **once a month** within a substation. . The following assets will be covered in this standard:

- Yard and security fences
- Yard and overall drainage
- Housekeeping
- Access control
- Battery rooms
- Oil dams
- Yard, security and building lights
- First line building maintenance
- Access and substation roads
- Storage facilities

The tick sheet is a guideline that may be adapted to suit the requirements of the Grids. Items that are not applicable to a specific substation may be deleted, provided that the minimum requirements of what to look for remain similar.

#### 2.1.2 Applicability

This document shall apply throughout Eskom Transmission and all its substations.

### 3 Roles and Responsibilities

The Grid High Voltage Managers will be responsible for the implementation, training, documentation management and the close out of all defects recorded during the maintenance cycle.

**Note:** This reporting must be done manually (by hand) during the physical maintenance. Electronic reporting will not be acceptable for the current process.

### 4 Implementation Date

The implementation date is June 2008.

### 5 Process for Monitoring

All defects identified as serious should be recorded on the tick sheet and reported immediately to the appropriate supervisor / head of department, for immediate attention. Action taken to rectify defects must be recorded on the check sheet.

The tick sheet is a guideline that may be adapted to suit the requirements of the Grids. Items that are not applicable to a specific substation may be deleted, provided that the minimum requirements of what to look for remain similar.

### 6 Authorisation

This document has been seen and accepted by:

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### 7 Revisions

<b>Date</b>	<b>Rev.</b>	<b>Remarks</b>
March 2008	0	New document

**BAY NAME:** .....

**WORKS ORDER NUMBER:** .....

AREA	ACTIVITIES	
<b>A. Outer fence/Gates</b>	Repair all openings	
	Treat all rusted areas (fence and gates)	
	Ensure all steel supports are intact	
	Ensure steel structures are earthed	
	Ensure all labels and signs	
	Ensure Earthing is intact	
	All gates properly installed	
	Ensure correct locks applied	
<b>B. Security Fence</b>	Check insulators and replace broken ones	
	Repair and re-tension fence wires where applicable	
	Ensure all steel supports are intact	
	Ensure steel structures are earthed	
	Test system and ensure that system is fully functional	
	Test alarms to Zero Control	
	Labels and Signs visible and in good condition	
	Treat all rusted areas (fence and gates)	
<b>C. Access control</b>	Check motor sliding gate for free movement over wheels & Roller bearings	
	Check motor swing outer/inner gate for broken Hinges and vertical alignment	
	Check correct distance between the two magnetic switches	
	Check magnetic lock to be working	
	Clean, inspect and lubricate all Rollers, wheels , Hinges and chains	
	Check condition of all bolts, lock nuts, split-pins and dowel-pins	
	Clean, inspect and lubricate the motor & Gearbox mechanisms	
	Clean, lubricate and inspect limit switches to be working	
	Check all cables to be safe from moving parts	
	Check all earth straps/connections to be fastened	
	Check and test electric fence sectors to pulls	
	Check for earth fault alarms on fence and correct	
	Check all safety signs to be present and legible	
	Check that all access gates to the electric fence are locked	
Check emergency cranks and drives are in working condition		
Check infrared safety beams to align & working		
Check if gate open/close is stopped when infra red beam is interrupted		
Check if override switches is working in conjunction with		

	magnetic interlock	
	Check motor gearbox oil level.	
	Retention and realignment of motor, drives and fan belts.	
	Clean IR beams and lenses.	
	Check condition and tightness of all bolts, lock nuts, split pins.	
	Perform a "by-pass" entrance as if all power supply is lost.	
<b>D. Security fence lights</b>	Ensure all lights are fully functional	
	Ensure all cable connections are closed and sealed	
	Ensure steel structures are earthed	
<b>E. Driveways/ Roads</b>	Ensure driveways are clean and free of any waste material or weeds	
	Ensure pavements and drainage areas are clean and free of any waste material or weeds	
	Speed control signs visible and in good condition	
	Ensure drainage system functional	
	Ensure road is in good condition at all times	
	Ensure road is properly marked	
<b>F. Fire Protection</b>	Ensure fire hydrants are fully functional (incl. all fittings and hoses)	
	Fire hydrants signs in place and in good condition	
	Fire hydrants may not be obstructed in any way	
	Update Fire protection register	
	Portable Extinguisher in place (Services must be up to date)	
	No leaking hydrants	
<b>G. Security building</b>	No leaking taps	
	Lights in working condition	
	Windows clean and not broken	
	Floor in good condition	
	Doors in good condition and lockable	
	Ceiling in good condition	
	Paper towels, toilet paper and soap available	
	Washroom clean and in good condition	
<b>H. HV Yard</b>	No weeds in yard	
	No redundant material	
	No open cable trenches	
	Broken trench covers replaced	
	All plinths clean and free of redundant material	
	Ensure drainage system is functional	

	Ensure yard stone is 75 -100 mm	
	Inspect all plinths for cracks /damage (Ensure plinths are in good condition)	
<b>I. Junction boxes</b>	Inspect and treat rusted areas	
	Inspect door seals and replace where required	
	Inspect door hinges and repair / replace where required	
	Ensure all doors can close and are lockable	
<b>J. Flood lights</b>	Ensure all lights are fully functional	
	Ensure all cable connections are closed and sealed	
	Ensure steel structures are earthed	
	Ensure control circuit is in good condition	
<b>K. Transformer Bank</b>	Bund wall unbroken and in good condition	
	Ensure bunded area is clean	
	Remove all birds nests from transformer	
	Clean plinth and treat oil leaks	
	Remove all redundant materials	
	Sampling points properly marked	
	PCB signs in place and visible	
<b>L. HV Yard Fence</b>	Repair all openings	
	Treat all rusted areas	
	Ensure all steel supports are intact	
	Ensure steel structures are earthed	
	Ensure gates closed, locked and properly secured to the supporting structure	
	Signs in place and visible	
<b>M. Oil dams</b>	Cover whole, in place and in good condition	
	Area clean and free of vegetation	
	Fence in good condition and gate locked	
	Bio-tubes in place for oil control	
	Check and report leaks immediately	
<b>N. Battery room</b>	Battery room clean	
	Doors in good condition and locked	
	Clean air filters	
	Ensure lights fully functional (incl emergency lights)	
	Ensure protective equipment in good condition	
	Correct signs in place and visible	
	Ceilings in good condition	
	Extractor fan functional	

<b>O. SF6 Gas Cylinders</b>	Empty and full cylinders are properly marked	
	Cylinders stored correctly and chained	
	Storage area clean	
	Storage area properly marked	
<b>P. Oil Storage</b>	Storage area is bunded and complies with OHS Act specifications	
	Oil sampling drum is marked	
	Oil storage area clean and free of redundant materials and unused drums	
	All drums are stored upright	
	Leaks contained within bunded area	
<b>Q. Control Building</b>	No water leaks	
	Lights fully functional	
	Housekeeping/hygiene	
	Ventilation system functional	
	Windows clean and not broken	
	Floors clean and in good condition	
	Doors and hinges in good condition	
	Gutters/down pipes	
	Ceiling in good condition	
	Ensure DC lights in working condition	
	Air conditioners functional and filters are clean	
	Ensure all cable trench covers in place and in good condition	

**FINDINGS / COMMENTS:** ✘ Needs attention      ✔ Correct

ITEM NR	REPORTED TO	ACTION TAKEN	TARGET DATE

**INSPECTED BY:** ..... **DATE:** .....

**SUPERVISOR:** ..... **SIGNATURE:** .....

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