Eskom	**Specification**	**Transmission Real Estate**

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Compiled by	**Supported by**	**Functional Responsibility**
T. Mahlophe	**I. Nhlumayo**	**E. Sikupela**
Senior Supervisor Technical	Facilities Manager	Middle Manager Real Estate
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Content

1. Introduction

Maintenance and servicing contract is required to keep all fire and emergency equipment at Eskom Simmerpan Transmission Division, Germiston at an acceptable standard and condition as required by Occupational Health and Safety act 85 of 1993, National Building Regulation no.103 of 1977, SANS 1475 Production of Reconditioned Fire Fighting equipment.

Maintenance and inspections performed shall be on a monthly basis to confirm visual operational status of fire equipment. This schedule establishes preventative maintenance of Fire equipment to minimize the likelihood of breakdowns and constantly ensuring readiness.

2. Supporting Clauses

2.1 Scope

2.1.1 Purpose

The purpose of this project is to provide a full range of Inspection, repairs, Testing, installation and Maintenance services of fire equipment as determined by the Employer. The service includes all Maintenance and Instillation of Fire Detection and fire protection equipment in Simmerpan Complex, Bernina, Apollo and Grand Central Airport Germiston.

2.1.2 Applicability

This document applies to all the Fire and Emergency equipment inspection, Testing and Maintenance at Eskom Transmission Simmer pan complex.

2.1.3 Effective date

The effective date of this document is as per the date and signature of the functional manager as indicated on the cover page of this document.

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] Act No 85: Occupational Health and Safety Act & Regulations.

[2] Act No 102: National Key Points.

[3] ISO 9001: Quality Management Systems.

[4] 34-1168: Colour coding, symbolic safety signs and demarcation.

[5] 32-37: Eskom Substance Abuse Procedure.

[6] 240-62946386: Eskom Vehicle and Driver Safety Management Procedure.

[7] 32-726: S.H.E. Requirements for the Eskom Commercial Process.
Note: See Annexure B: SHE Requirements for Tender Enquiries.
Annexure C: SHE Tender Evaluation and Scoring Card.
Annexure D: SHE Post-Contract Reviews.

[8] 240-62196227: Eskom Life Saving Rules Standards.

[9] SANS 1475: Production of Reconditioned Fire Fighting Equipment

[10] ISO 14001: ISO 14001 2004 Environmental management System, requirements with guidance for use

[11] ISO 45001:2018 Occupational Health and Safety Management Systems Informative, Requirements.

[12] 32-123 Eskom Standard for Emergency Planning.

[13] 240-54937454: Inspection, Testing and Maintenance of Fire Protection Systems Standard

[14] National Building Regulations and Building Standards Act 103 of 1977

2.2.2 Informative

- EN 12101 (all parts), Smoke and heat control systems.
- SANS 306-4, Fire extinguishing installations and equipment on premises.
- SANS 193 Fire Dampers
- SANS 7240-16 Fire detection and alarm systems Part 16: Sound system control and indicating equipment
- SANS 543, Fire hose reels (with semi-rigid hose).
- SANS1475-2
- SANS 10105-1
- SANAS approval for CO2 pressure testing
- NFPA 12 Standard on Carbon Dioxide Extinguishing Systems
- [24] NFPA 13 Standard for the Installation of Sprinkler Systems
- [25] NFPA 15 Standard for Water Spray Fixed Systems for Fire Protection
- [26] NFPA 17 Standard for Dry Chemical Extinguishing Systems
- [27] NFPA 25 Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems

2.3 Definitions

Definition	Description
SCBA	Self-Containing Breathing Apparatus
Hoses	Fire Hoses with Hose Connections
Charging unit	SCBA Cylinder Mobile Charging Unit
Trailer	Wild Fire Trailer unit with pumps

2.4 Abbreviations

Abbreviation	Explanation
COC	Certificate of Compliance
FDS	Fire Detection System
FIP	Fire Indication Panel also called a CIE
ISO	International Standards Organisation
ITM	Inspection, Testing and Preventative Maintenance
ITP	Inspection, Testing and Procedures
SHE	Safety Health and Environment
SANS	South African National Standards
SAQCC Fire	South African Qualification & Certification Committee Fire

2.5 Roles and Responsibilities

The *Contractor* shall ensure that:

- Inspection, testing and maintenance measures are to be performed by competent persons only. The FDS competent persons are to ensure that they fully comply with the following requirements as per the different classifications of activities undertaken on the Fire Detection Systems:

Inspection Personnel and Services (Maintenance and or Fire Officers)

- ✓ a) These are the individuals who conduct a visual examination of a system or portion thereof to verify that it appears to be in operating condition, in the proper location, and is free of physical damage or conditions that impair the operation.
- ✓ b) The inspections shall be performed by inspection personnel who have developed competence through training and experience of the Fire Detection System (and where it interfaces to the Fire Protection Systems) and other systems.
- ✓ The inspection personnel shall have attended and certified as competent with regards to the SANS 10139 and other SANS standards, which are applicable to the Fire Detection Systems and the configurations as implemented at the particular BU.

Testing Personnel and Services

- ✓ a) The testing personnel shall have the knowledge and experience of the testing requirements for fire detection system and its interfaces to other systems (such as Fire Protection Systems, HVAC, etc.).
- ✓ b) The testing personnel shall have attended and certified as competent with regards to the SANS 10139 and the other SANS standards, which are applicable to the Fire Detection Systems and configurations implemented at the particular BU.
- ✓ c) The testing shall be performed by testing personnel who have developed competence through training and experience of the Fire Detection System (and where it interfaces to the Fire Protection Systems) and other systems.

Testing Activities without Tools (Maintenance personnel or Fire Officers)

- ✓ These are individuals who perform procedures used to determine the status of the systems as intended, by conducting periodic physical tests and checks on the systems.

Testing Activities with Tools (Maintenance personnel)

- ✓ These are individuals who perform procedures with dedicated and certified tools for the purpose of testing, which are used to determine the status of the systems as intended, by conducting periodic physical tests and checks on the systems.

Maintenance Personnel and Services

- ✓ a) The maintenance activities shall be performed by the maintenance personnel who have developed maintenance competence through training and experience of the Fire Detection Systems (and where it interfaces to the Fire Protection Systems) and other systems.
- ✓ b) The maintenance personnel shall have attended and certified as competent with regards to the SANS 10139 and the other SANS standards, which are applicable to the Fire Detection Systems and configurations as implemented at the particular BU.
- ✓ c) The maintenance personnel shall be declared competent on the Plant Safety Regulations.

Maintenance Activities

- ✓ The individuals who perform those procedures, adjustments, replacement of components and maintenance activities as described in the OEM O&M manuals and Eskom Work Instructions, that can affect any aspect of the performance of the fire detection systems, and the systems the fire detection system interfaces to.
- ✓ The maintenance personnel shall be qualified (SAQCC Fire Serviceman) in the maintenance and servicing of the fire detection systems.
- ✓ The maintenance personnel shall have OEM certified training and declared competent on the specific type and brand of fire detection system being serviced at the maintenance support levels.

- The Employees of the service provider shall comply with Eskom's policies and site regulations.
- Workmanship shall, at all times, be of a grade accepted as the best practice of the particular trade involved and as stipulated in written standards of recognised organisations or institutions of the respective trades, except as exceeded or qualified by the specifications. The *Employer* shall determine the acceptability of workmanship.
- The *Contractor* shall provide a complete Quality Assurance plan in accordance with the requirements of ISO 9001: 2015 to the *Employer* for approval. This plan must ensure an integrated quality service as part of the contract. Execution of all quality related activities, including inspection and test plans compilation and execution, spares material quality inspections and all quality related record keeping is part of the *Contractor's* scope of work.

3. Document Content

3.1 Requirements

3.1.1 Adherence to Eskom generic policies

All *Contractor Employees* shall comply with the non-use of cell phones in restricted areas, adherence to Eskom's life-saving rules, no smoking policy, etc.

3.1.2 Provision of Manpower

The successful *Contractor* shall utilise / provide skilled and suitably qualified staff as governed by Eskom Maintenance Contracts User Specification Requirements and should conform to: -

- Quality Management Control and Assurance as per ISO Standards.
- Have a valid South African Qualifications Certification Committee (SAQCC) certificate.
- Occupational Health and Safety Act 85/1993 and (SHE) Standards
- Procedure writing.
- Have valid medical fitness certificate.

3.1.3 *Contractor's* Management, Meetings and Key People

- The *Contractor* shall be required to do safety induction prior to start any work on site.
- The *Contractor's* safety file must be approved before any work commence on site.
- Other contract related meetings shall be communicated to the *Contractor* on arrival to site.

3.1.4 Plant and Material

- All spares and materials required for repairing, maintaining, replacing and new fitting will be provided by the *Contractor*.
- Any damage caused is repaired by the *Contractor* at his/her own cost prior to take over.

3.1.5 Equipment

The *Contractor* shall provide all tools and equipment required for the project.

3.2 Management Reporting and Process for Monitoring

The *Employer* will establish a sound contract management principle.

3.2.1 General Requirements

- The *Contractor* immediately reports all injuries as well as any threat to health or safety of which it becomes aware of on the site of the *Employer*.
- The *Contractor* shall provide in writing a works programme with achievable times lines to the *Employer* before commencement of the project.
- The *Contractor* shall provide to the Employer a daily progress report that speaks to the works programme, all delays shall be explained to the *Employer*.
- The *Contractor's* performance evaluation shall be done during ad hoc meetings between the *Contractor* and the *Employer* during the project period.
- The *Contractor* shall carry out tasks as described in the scope of work and will only report to the *Employers* contract manager appointed for this project.

3.3 Applicable Scope of Work

3.3.1 Works

The *Contractor* will be expected to perform the following activities: -

Extinguishers

- Extinguisher is to be removed from its position and replaced with serviceable one.
- Extinguisher to be stripped.
- Extinguisher is to be inspected for any defects, such as rust, cracks etc.
- Extinguisher hoses that have deteriorated from exposure to the elements are to replaced.
- Extinguisher gauges are to checked and calibrated

- Extinguishers that have faded or slightly rusted areas are to be sandblasted and repainted and all decals replaced
- Extinguishers are to be pressure tested
- Extinguishers are to be supplied with pressure test certificates post service.
- Extinguishers are to be replaced with decal sticker showing when next service is due
- Ensure Hydrostatic testing of CO2 extinguishers with Certificate when required.
- Inspect stickers to be added to be added indication next service date.
- Ensure Fire extinguisher bracket mountings are in place

Hose Reels

- Hose reels are to be inspected and replaced when necessary.
- Inspect isolation valves functionality and repair or replace when defective
- Ensure that all spares are readily available at the fire storeroom
- Hoses are to be check for deterioration.
- Nozzles are to be checked if still in place.
- Leaking seals are to be replaced when leaking
- Hose reels are to be inspected together with extinguishers.

Hydrants

- Hose connection seals are to be checked if in place
- Hydrant to be checked for leaks
- Hydrant to be Flushed
- Fire hoses are to be inspected and replaced if required
- Fire hydrants needs to be provided with a length of appropriate fire hose 24 meters or 30 meters and a spry nozzle
- The pump must be checked to ensure it is giving rated pressure.

Detection and Alarms

- All stand-alone fire detectors and alarms are to be tested and if necessary replaced.
- Check if the system is working correctly. Record faults and failures, and fix.
- Test all detectors, as well as smoke and flame detectors. Make sure to calibrate alarm sensors.
- Check any physical damages to any component part and fix where necessary.

Gas Suppression system

FDS External alarms (Sounder and or Beacon)

INSPECT the following:

- Inspect to ensure the external alarm label is legible with the word ‘FIRE ALARM’ in characters not less than 25 mm in height.
- CHECK if all plant labelling and reference labels are provided, properly affixed and legible.
- Uniquely identified with the KKS or AKZ codes, and in certain circumstances it has a system unique code (for identification during PM and or defect notification).
- The following have to be evaluated during the visual inspection:
- Ensure that there is no obstructions in front of the annunciators

Control and indicating equipment (CIE)

INSPECT the following on the CIE:

- Fire Alarm Panel (FIP), Sub Alarm Panel (SAPP), Repeater Panel, Mimic Panel:
- Ensure that they are clearly visible, readily accessible and free from dust and contaminants; and
- Where a panel is obscured by a door, check that the door is correctly labelled.
- The components are verified to be in a healthy status.

CIE Batteries and battery enclosure

- Where vented batteries are used, INSPECT the battery enclosure for evidence of corrosion.
- For all the batteries CHECK for the following on the fire alarm panel batteries:
- Lose terminals or connections
- Corrosion on terminals,
- Damaged cabling,
- Visually Electrolyte levels (where applicable),
- Battery damage and deformity.
- Verify marking of the month and year if manufacturing
- CHECK charging equipment for lose terminals corrosion at terminals, damaged cabling.

Zone Block Plan

INSPECT zone block plans (Detection zones) to ensure that they are securely mounted and legible and supplementary zone drawings, where required, are available and legible.

Manual call points

- Physically in a good condition, properly mounted, the cabling connected and the Manual Call Points free of conditions likely to adversely affect its function (dust and water ingress).
- Confirm unobstructed view and access to the MCPs
- Where manual call points use replaceable frangible elements, ENSURE that at least one replacement element and tool is available for replacing the element where required.
- MCP can be identified through its functional location code (KKS, AKZ and Unique identifier).
- Incorrect labels no labels, dirty labels or damaged labels.

Projected beam smoke detectors

Ensure the following:

- Free of mechanical damage
- Free of water damage
- Clean of debris and dust.
- Are properly secured.
- Verify the beam path is unobstructed.
- Are not painted over which can inhibit its function.
- Incorrect labels, no labels, dirty labels or damaged labels.

Smoke Detectors

Ensure the following:

- Free of mechanical damage
- Free of water damage
- Clean of debris and dust.
- Are properly secured
- Are not painted over which can inhibit its function.
- Incorrect labels, no labels, dirty labels or damaged labels.

Air Duct Detectors

- Verify that the detectors are rigidly fixed
- Confirm that no penetrations exist in the return air duct in the vicinity of the detector.
- Confirm that the duct detector and sampling tubes are inspected to ensure that there are no obstructions for smoke entry in the sensing chamber from dust dirt or debris.
- Incorrect labels, no labels, dirty labels or damaged labels.

Air sampling system

- Verify that the inline filters are clean, verify that the system piping and fittings are installed correctly and airtight and permanently fixed.
- Verify that the sample ports or points are not obstructed.
- Verify that there are no sustained alarms.

Heat Detectors

- Free of mechanical damage
- Free of water damage
- Clean of debris and dust.
- Are properly secured
- Are not painted over which can inhibit its function.
- Building conditions i.e. civil changes have not affected the function or effectiveness of the devices.
- Are not adversely affected by temporary/permanent obstructions typically during constructions or modifications in the surroundings.
- Incorrect labels no labels, dirty labels or damaged labels.

Radiant Heat detectors (Flame or Amber Detectors)

- These detectors are line of sight it is therefore important to ensure there are no physical obstructions between the detectors and the area being protected.
- Clean from debris, dust or contaminants.
- Confirm the orientation of the detector against the original drawing and being directed towards the area of protection.
- Incorrect labels no labels, dirty labels or damaged labels.

Video Image Smoke and Fire Detectors

- Verify that no point requiring detection is obstructed or outside the VIFD camera detector's field of view.
- The inspection of camera condition and status on the VIFD HMI Station
- The VIFD camera must be clean from debris, dust or contaminants.
- Confirm the orientation of the VIFD camera against the original drawing and being directed towards the area of protection.
- Confirm that the application of the software filters in the VIFD system is still applicable and not unnecessarily masking detection areas. Evaluate if various false alarms are being generated, through environment, activities or physical orientation (Optimise through the various means available filtering, change orientation or evaluate activities causing false activations, etc.).
- Verify that there are no incorrect labels, no labels, dirty labels or damaged labels.

Fire extinguishing systems switches /suppression system switches

- To be inspected for condition on a regular basis

Supervisory signal devices (Pressure and flow switches)

- Visual inspection of the initiating device installed outdoors confirms that there is no physical damage of the supervisory device, seals and covers.
- Free of water damage.
- Clean of debris and dust.
- Are properly secured.
- Incorrect labels no labels, dirty labels or damaged labels.

Carbon Monoxide detectors/systems

- Visual inspection of the initiating device installed outdoors confirms that there is no physical damage of the supervisory device, seals and covers.
- Free of water damage.
- Clean of debris and dust.
- Are properly secured.
- Incorrect labels no labels, dirty labels or damaged labels.
- Readings on display screen is visible and readable.

Multi-Criteria and Multi sensor detectors

- Free of mechanical damage
- Free of water damage
- Clean of debris and dust.
- Are properly secured
- Are not painted over which can inhibit its function.
- Correct labels, Incorrect labels, no labels, dirty labels or damaged labels.

Gas concentration detection devices.

- Visual inspection of the initiating device installed outdoors confirms that there is no physical damage of the supervisory device, seals and covers.
- Free of water damage.
- Clean of debris and dust.
- Are properly secured.
- Incorrect labels no labels, dirty labels or damaged labels.
- Readings on display screen is visible and readable.

Function Interfaces

HVAC, Smoke Control and Extraction, Elevator Shutdown, Elevator Recall, Door unlock interface.

- Visual inspection of the interface devices that confirms that there is no physical damage of the interface device, seals and covers are in place and in good condition.
- Free of water damage.
- Clean of debris and dust.
- Are properly secured.
- Correct labels, incorrect labels, no labels, dirty labels or

Other warning devices

- Where other warning devices are used as the alarm-indicating devices, INSPECT all devices to ensure that they are in place, in good condition and clean of dust and contaminants

Service life

- INSPECT detectors, equipment or other items having a defined service life and report where the service life is exceeded or will be exceeded before the next scheduled service.

Protected areas survey

SURVEY all areas of the building from floor level and check—

- That the fire detection and alarm system has not been altered from the approved design, damaged or compromised;
- Detection device and remote indicators are appropriate for the current use;
- For any condition that may cause a nuisance alarm or the unintentional operation of a suppression system;
- All exposed cabling, conduits, junction boxes and the like for any condition that may impact on the performance of the system is labelled in accordance with approved design.

Additional information

- Check all initiating devices and verify time delays for system discharge.
- All system faults to be checked, fixed and cleared of the panel
- Ensure releasing device activates properly.
- Verify abort device and manual release functionality.
- Check weight and/or pressure of agent containers.
- All Gas nozzles to be checked for any obstructions or blockages
- Ensure that all manual call points are tested and verified.
- All cylinders to be inspected for pressure losses and rust, The cylinder was dry tested to confirm operation.
- Verify the orientation of all discharge, pipe fittings and nozzles.
- Ensure that Pipework is not damaged.
- Ensure that the area is well ventilated and has no risk of high humidity.
- All supervised circuits have been tested for ‘trouble response’ prior to testing. With evidence provided.
- Any initiating and notification circuits have been tested and inspected for end-of-line devices [where required]. With evidence.
- All polarized alarm devices and auxiliary relays have been tested and inspected for polarity prior to testing. With evidence provided.
- Each detector has been pre-tested with evidence for operation.
- Ensure Remote panel installed at each entrance / exit are tested and working
- Equipment, including all ancillaries and components are fully earthed in line Earthing has been tested.

- If batteries are being used for secondary power source they are fully charged.

3.3.2 Access, working platforms and scaffolding

- No scaffolding and platforms will be used without it having been safety cleared and the required documentation completed as per SANS 10085-1:2004 or recent version.
- Scaffolding and platforms will be supplied and daily inspected by the *Contractor*.
- All working at heights apparel should be certified and inspected daily

3.3.3 Access for and interface with other *Contractor*

- During the progress of the work the *Contractor* shall provide reasonable access to other *Contractors* to execute work carried out by other *Contractors*
- The *Contractor* will ensure that any damages made during the execution of their activities will be repaired (*Contractor's* cost) to the satisfaction of the *Employer* and that the *Employer* will not suffer adverse inconvenience in utilising parts of the complex during the project execution.

4. Revisions

Date	Rev.	Compiler	Remarks

5. Development Team

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

Name and Surname	Designation
Tshepo Mahlophe	Senior Supervisor Technical
Kabelo Degashu	Senior Supervisor Technical
Thembi Makgamatho	Senior Supervisor Technical
Leonard Moahloli	Senior Supervisor Technical
Noluthando Dondolo	Officer Safety Health & Environment