| Eskom | Scope of Work | Peaking |
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## CONTENTS

## TABLES

# 1. INTRODUCTION

This document details the scope of work and serves as input for the term services contract that Eskom is planning to institute for the fire detection systems at Drakensberg Power Station.

The contract enables the use of an SAQCC Accredited *Contractor* to perform routine and non-routine maintenance to be conducted to ensure that duration of impaired conditions is greatly reduced and that the fire detection systems are reliable and fully functional to perform its design function.

# 2. SUPPORTING CLAUSES

## 2.1 SCOPE

This document provides the detailed scope of work for the Drakensberg Fire Detection System Contract for the purpose of contract initiation.

### 2.1.1 Purpose

The purpose of this Scope of Work is to state the *Employer's* requirements and provide the *Contractor* with the necessary information to submit a comprehensive tender.

### 2.1.2 Applicability

This document shall apply to Peaking, specifically Drakensberg Power Station and is to be used as an input to the associated Contract.

### 2.1.3 Effective date

As per authorisation date.

## 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] OHS Act Occupational Health and Safety Act No. 85 of 1993

[2] PER Pressure Equipment Regulations

[3] ISO 9001 Quality Management Systems

[4] 240-105658000 Supplier Contract Quality Requirements Specification

[5] 240-54937450 – Fire Protection and Life Safety Design Standard

[6] 240-62196227 Eskom Life-saving Rules Directive 23-421

[7] 32-136 Contractor Health and Safety Requirements

[8] 240-150642762 Generation Plant Safety Regulations

[9] SANS 10400-T The Application of the National Building Regulations Part T – Fire Protection

[10] 240-54937454 Inspection, Testing and Maintenance of Fire Protection Systems Standard

[11] 240-56737448 Fire Detection and Life Safety Design Standard

[12] 240-56737654 Inspection, Testing and Maintenance of Fire Detection Systems Standard

### 2.2.2 Informative

[13] N/A

### 2.2.3 Definitions

Affected Property – Drakensberg site including freestanding buildings eg Visitors centre, Stores etc

### 2.2.4 Disclosure Classification

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

## 3. EXECUTIVE OVERVIEW

Drakensberg Pumped Storage Power Station has a nominal generating capacity of 1000MW which is produced from four 250MW Francis type vertical turbine generator sets. The power station is situated underground, in the Northern Drakensberg Mountains in KwaZulu-Natal, approximately 30km from the town of Bergville. Its four units were commissioned between 1979 and 1981.

The GPS Coordinates for the Affected Property are as follows:

-28.56468 (Latitude), 29.08408 (Longitude)

This contract makes provision for routine and non-routine maintenance of the fire detection systems at Drakensberg Power Station to ensure reliable operation of the Affected Property fire detection and the gas suppression fire protection systems. The routine maintenance includes regular inspection, servicing and testing of the identified fire detection systems and non-routine maintenance involves service calls that are defined as maintenance and repair work requirements.

This contract constitutes a 5-year agreement that makes provision for the supply of labour, Equipment and materials, parts, supervision and transportation necessary to maintain the fire detection systems at Drakensberg Power Station in a serviceable condition as required by the relevant fire codes, regulations and standards.

This contract is managed by a SAQCC Fire Accredited *Contractor* (SAQCC Fire Maintainer) who submits detailed reports following the inspection, servicing and testing of the fire protection systems.

### 3.1 *Employer*'s requirements for the *service*

#### 3.1.1 The *Contractor's* scope of supply

The scope of supply includes the following:

a) Make provision for the supply of labour, equipment and materials, parts, supervision and transportation for the completion of the *services*.

b) Repair any standing defects identified during the inspections. Failure to repair defects during the initial inspection, must be repaired during the next scheduled inspection.

c) The services are managed by a SAQCC Fire Accredited *Contractor* and the relevant resources that will perform the services have valid SAQCC Fire registration (Maintainer/Commissioner and Installer). Proof of SAQCC Fire registration for the relevant resources is submitted to the *Service Manager*. They are to be accredited Maintainer/Commissioner and Installer.

d) *The Contractor* ensures that all the resources are accredited with the Fire Detection System and the Gas Suppression Systems OEM certifications for the systems that exist at the Affected Property.

e) Resources working on gas suppression systems will have relevant SAQCC Fire Gas Suppression certification accreditations as follows: Gas Suppression Maintainer/Commissioner and Installer, including the Gas Suppression OEM certification for the system and the gaseous types used at the Affected Property.

f) The *Contractor* submits detailed reports on the completion of inspections, servicing and tests for the respective components covered during each service period and also for all the service calls that are attended to.

g) The *Contractor* provides certification on completion of inspections, servicing, and tests on all the components of FDS, the FDS as system and interfaces to 3d party systems as specified in the 240-56737654 Inspection, Testing and Maintenance of Fire Detection Systems Standard and the gas suppression systems based 240-56737654 Inspection, Testing and Maintenance of Fire Detection Systems Standard.

h) The *Contractor* supplies, third-party test certificates for all materials and consumables used for the corrective, testing, repairs and routine maintenance activities.

i) The *Contractor* supplies Material certificates and quantities used, for items that are supplied and utilised by the *Contractor* in rendering the services, i.e. the certificate and quantity for smoke detector test spray

j) The *Contractor* is responsible for the supply of PPE (Personal Protective Equipment) for their own personnel working on the Affected Property.

k) The *Contractor* is responsible for the supply of the Equipment used for the repairs, testing and inspections associated with the preventative and the corrective maintenance activities on the fire detection system and gas suppression systems on the Affected Property.

l) The *Contractor* is responsible for the supply of the Plant and Materials such as the spares for all the components of the fire detection system and gas suppression systems to enable and support the preventative and the corrective maintenance activities on the Affected Property.

m) The *Contractor* submits the safety file prior to the start of the *service* for acceptance by the *Service Manager*.

### 3.1.2 The *Contractor Provide* the Service

The following is a summary of the services on the fire detection system:

| Task | Equipment/Systems | Frequency |
|---|---|---|
| Inspection, fault-finding, servicing, repair and clearing of standing faults, disabled devices and alarms | Aritech Fire Detection, Video Fire & Smoke Detection (VFSD), Beam Detectors and Aspiration Systems | Monthly |
| Inspection and Servicing | Aritech Fire Detection, Video Fire & Smoke Detection (VFSD), Beam Detectors and Aspiration Systems | 3-Monthly |
| Servicing | Aritech Fire Detection, Video Fire & Smoke Detection (VFSD), Beam Detectors and Aspiration Systems | Yearly |
| Functional Testing | Aritech Fire Detection and Video Fire & Smoke Detection (VFSD) Systems | Yearly |

All *services* performed on the Affected Property are in accordance with the *Employers* approved procedures and instructions.

The *Service Manager* issues for each *service* a Preventative Maintenance (PM) Work Order for to the *Contractor* to fill in and complete. The *Contractor* attached relevant the *service* reports on completion of the respective *service*.

Any anomalies that are noticed by the *Contractor* during the execution of the *services* are recorded and brought to the *Service Manager's* attention immediately.

To Provide the Work, the *Contractor* executes the following to ensure the highest level of reliability and availability through the following activities:

### 3.1.2.1 Monthly

**(a) The *Contactor* performs the inspection, fault-finding, servicing, repair and clearing of standing faults, disabling devices and alarms on Aritech Fire Detection and Video Fire & Smoke Detection (VFSD) Systems**

- The Aritech Fire Alarm System for the Affected Property as is detailed below are subjected to monthly inspection, fault-finding and clearing of faults and the clearing of the disabled devices by the *Contractor*. These include panels for the following areas:
  - Surface Building Stores
  - Headrace
  - Surface Administration Building
  - Visitors Centre
  - Power House – Equipment Room
    - Main Aritech Panel
    - Aritech Repeater Panel
    - Unit 1 Generator Aspiration Unit
    - Unit 2 Generator Aspiration Unit
    - Unit 3 Generator Aspiration Unit
    - Unit 4 Generator Aspiration Unit
    - Lift Shaft Aspiration Unit
    - Unit 1 Beam Detector
    - Unit 2 Beam Detector
    - Unit 3 Beam Detector
    - Unit 4 Beam Detector
  - Transformer Panels
    - Generator Transformer 1 Panel
    - Generator Transformer 2 Panel

- Generator Transformer 3 Panel
- Generator Transformer 4 Panel
- Service Transformer 1 Panel
- Service Transformer 2 Panel
- Station Transformer 1 Panel
- Station Transformer 2 Panel

- The Video Fire & Smoke Detection (VFSD) System for the Affected Property as is detailed below are subjected to monthly inspection, fault-finding and clearing of the faults and clearing of the disabled devices by the *Contractor*.
  - Control Room Client PC Alarm Monitor
  - Security Office Client PC Alarm Monitor
  - Hub Enclosures
  - Camera Enclosures
  - Cameras
  - Lights

- Monthly inspection, fault-finding, servicing, repair and clearing of standing faults, and clearing of the disabled devices and alarms comprise of the following activities by the *Contractor*:

  - **Fire Alarm Systems**
    - Before start of any work, obtain the status condition of all the panels, record the status condition of all panels, record faulty device reference numbers, zones and the specific fault detail that are evident on the panels. The status condition before and after work is captured by the *Contractor* and submitted in a detailed report to the *Service Manager*.
    - Perform fault-finding on the panels that have standing faults and alarms to determine the cause of the faults and the alarms.
    - Proceed by clearing any standing faults and alarms.
    - Repair any standing defects identified during the inspections. Failure to repair defects during the initial inspection, must be repaired during the next scheduled inspection.
    - Liaise with the *Service Manager* on the required spares and the action to be taken to clear any faults that need replacement of spare items.
    - The outcome of the monthly inspection, fault-finding, servicing & repair and clearance of any standing faults and alarms on the fire detection panels are captured in a detailed report that is submitted by the *Contractor* to the *Service Manager*. This report at a minimum contains the findings of the inspection, referenced the faulty devices with the specific device number, causes of the faults, action taken to clear the faults, servicing and any recommendations that may transpire from the service.

  - **Video Fire & Smoke Detection (VFSD) System**

- Before start of any work, obtain the status condition of the VFSD System by recording on the Client PC in the Control Room any faulty devices on the system, record faulty device reference numbers, zones and the specific fault detail that are evident on the panels. The status condition of the VFSD System at the Head Race is captured separately. The status condition before and after work is captured by the *Contractor* and is submitted in a detailed report to the *Service Manager*.
- Perform fault-finding on the VFSD System that have standing faults and alarms to determine the cause of the faults and the alarms.
- Proceed by clearing any standing faults and alarms.
- Liaise with the *Service Manager* on the required spares and the action to be taken to clear any faults that need replacement of spare items.
- The outcome of the monthly inspection, fault-finding, servicing & repair and clearance of any standing faults and alarms on the VFSD System are captured in a detailed report that is submitted by the *Contractor* to the *Service Manager*. This report at a minimum contains the findings of the inspection, referenced the faulty devices with the specific device number, causes of the faults, action taken to clear the faults, servicing and any recommendations that may transpire from the service.

- **Aspiration Systems**
  - Before start of any work, obtain the status condition of the Aspiration Systems by recording any faults and the specific fault detail that are evident on the panels. The status condition before and after work is captured by the *Contractor* and submitted in a detailed report to the *Service Manager*.
  - Perform fault-finding on the Aspiration Units that have standing faults and alarms to determine the cause of the faults and the alarms.
  - Proceed by clearing any standing faults and alarms.
  - Liaise with the *Service Manager* on the required spares and the action to be taken to clear any faults that need replacement of spare items.
  - The outcome of the monthly inspection, fault-finding, servicing & repair and clearance of any standing faults and alarms on the Aspiration Units are captured in a detailed report that is submitted by the *Contractor* to the *Service Manager.*

- **Beam Detectors**
  - Before start of any work, obtain the status condition of the Beam Detection Systems by recording any faults and the specific fault detail that are evident on the panels. The status condition before and after work is captured by the *Contractor* and submitted in a detailed report to the *Service Manager*.
  - Perform fault-finding on the Beam Detectors that have standing faults and alarms to determine the cause of the faults and the alarms.
  - Proceed by clearing any standing faults and alarms.
  - Liaise with the *Service Manager* on the required spares and the action to be taken to clear any faults that need replacement of spare items.
  - The outcome of the monthly inspection, fault-finding, servicing & repair and clearance of any standing faults and alarms on the Beam Detectors are captured in a detailed report that are submitted to the *Service Manager.*

### 3.1.2.2 3-Monthly

**(a) The *Contactor* performs the inspection and servicing of Aritech Fire Detection and Video Fire & Smoke Detection (VFSD) Systems**

- The Aritech Fire Alarm System for the power station as detailed below are subjected to 3-monthly inspection and servicing. These include panels for the following areas:
  - Surface Building Stores
  - Headrace
  - Surface Administration Building
  - Visitors Centre
  - Power House – Equipment Room
    - Main Aritech Panel
    - Aritech Repeater Panel
    - Unit 1 Generator Aspiration Unit
    - Unit 2 Generator Aspiration Unit
    - Unit 3 Generator Aspiration Unit
    - Unit 4 Generator Aspiration Unit
    - Lift Shaft Aspiration Unit
    - Unit 1 Beam Detector
    - Unit 2 Beam Detector
    - Unit 3 Beam Detector
    - Unit 4 Beam Detector
  - Transformer Panels
    - Generator Transformer 1 Panel
    - Generator Transformer 2 Panel
    - Generator Transformer 3 Panel
    - Generator Transformer 4 Panel
    - Service Transformer 1 Panel
    - Service Transformer 2 Panel
    - Station Transformer 1 Panel
    - Station Transformer 2 Panel
- The Video Fire & Smoke Detection (VFSD) System for the power station as detailed below are subjected to 3-monthly inspection and servicing.
  - Control Room Client PC Alarm Monitor
  - Security Office Client PC Alarm Monitor
  - Hub Enclosures
  - Camera Enclosures

- Cameras
- Lights

- 3-Monthly inspection and servicing comprise of the following activities:
-
    - **Aritech Fire Alarm Systems**
        - Before start of any work, obtain the status condition of all the panels, record the status condition of all panels, record faulty device reference numbers, zones and the specific fault detail that are evident on the panels. The status condition before and after work is captured by the *Contractor* and submitted in a detailed report to the *Service Manager*.
        - Prepare for testing by reading through the logbook that is kept on the main panel in the control room. Any corrective action that has not yet been taken should be noted and carried out during this service.
        - Obtain a printout from the panel of all the faulty devices. Exchange faulty devices with replacement units, set to the same address. Where required, dirty sensors must be cleaned for re-use.
        - Obtain a printout of device analogue values. Compare these values to the permitted values for each point. Replace faulty devices or repair wiring.
        - Print out a complete system configuration from the panel software. Compare this to the system specification and verify that the system zoning, input-output mapping, and other settings have not changed.
        - Check the panel for any disabled devices and investigate the reason. Any faults must be rectified and any disabled devices must be enabled.
        - Alarm Test:
            - Test one sensor or call point in each zone. Activate each point in turn, checking that the sounders operate and that the panel reacts correctly. Note: Precautionary measures must be taken to prevent discharge of foam/water spray systems during alarm testing of the transformer panels as the systems will activate upon alarm testing of the panels.
            - For remote panels, verify that the alarm is also generated on the main panel in the equipment room and that the description is displayed on the SCADA.
        - Fault Test:
            - Remove one sensor in the system and check that the panel correctly reports the event.
            - For remote panels, verify that the fault indication is also generated on the main panel in the equipment room and that the description is displayed on the SCADA.
            - Accept the fault, replace the sensor and reset the panel.
        - Visually inspect control panels and components for any signs of moisture ingress, damage, deterioration or any abnormalities.
        - Check that all printed circuit boards are in a good condition, free of dust and securely mounted on the panel.
        - Examine batteries and their connections. Test batteries and determine if replacement is required or if batteries are still in good condition. Check if the battery replacement date will be passed before the next service and if so, replace the battery. The age of the battery should be marked on it with

a label. Sealed lead acid batteries should be replaced at least every 2 years.
- Restore the system to normal condition on completion of the service.

- **Video Fire & Smoke Detection (VFSD) System**
  - Before start of any work, obtain the status condition of the VFSD System for the Power Station and the Head Race, record the status condition of all panels, record faulty device reference numbers, zones and the specific fault detail that are evident on the panels. The status condition before and after work is captured by the *Contractor* and is submitted in a detailed report to the *Service Manager*.
  - Any corrective action that has not yet been taken should be noted and carried out during this service. Check on the Client PC in the control room if there are any faulty cameras that need to be investigated. Any faults must be rectified and any disabled devices must be enabled.
  - Alarm Test:
    - Test one camera in each zone. Activate each point in turn, checking that the main fire panel reacts correctly.
  - Fault Test:
    - Disconnect a camera in the system and check that the panel correctly reports the event.
    - Accept the fault, reconnect the camera and reset the panel
  - Visually inspect all HUB Enclosures and Camera Enclosures for any signs of moisture ingress, damage, deterioration or any abnormalities.
  - Visually inspect all cameras and lights for damage, deterioration or any abnormalities and verify that all are in working condition.
  - Examine batteries and their connections on all HUB and Camera Enclosures. Test batteries and determine if replacement is required or if batteries are still in good condition. Check if the battery replacement date will be passed before the next service and if so, replace the battery. The age of the battery should be marked on it with a label. Sealed lead acid batteries should be replaced at least every 2 years.
  - Restore the system to normal condition on completion of the service.

- **Aspiration Systems**
  - Before start of any work, obtain the status condition of the Aspiration Systems by recording any faults and the specific fault detail that are evident on the panels. The status condition before and after work is captured by the *Contractor* and submitted in a detailed report to the *Service Manager*.
  - Perform fault-finding on the Aspiration Units that have standing faults and alarms to determine the cause of the faults and the alarms.
  - Proceed by clearing any standing faults and alarms.
  - Check the detector for any blockages and clear if required.
  - Inspect the condition of the filters and clean if required.
  - Liaise with the *Service Manager* on the required spares and the action to be taken to clear any faults that need replacement of spare items.
  - Visually inspect panels and components for any signs of moisture ingress, damage, deterioration or any abnormalities.
  - Examine batteries and their connections. Test batteries and determine if replacement is required or if batteries are still in good condition. Check if

the battery replacement date will be passed before the next service and if so, replace the battery. The age of the battery should be marked on it with a label. Sealed lead acid batteries should be replaced at least every 2 years.
- Restore the system to normal condition on completion of the service.

- **Beam Detectors**
  - Before start of any work, obtain the status condition of the Beam Detection Systems by recording any faults and the specific fault detail that are evident on the panels. The status condition before and after work is captured by the *Contractor* and submitted in a detailed report to the *Service Manager*.
  - Perform fault-finding on the Beam Detection Units that have standing faults and alarms to determine the cause of the faults and the alarms.
  - Proceed by clearing any standing faults and alarms.
  - Liaise with the *Service Manager* on the required spares and the action to be taken to clear any faults that need replacement of spare items.
  - Visually inspect panels and components for any signs of moisture ingress, damage, deterioration or any abnormalities.
  - Examine batteries and their connections. Test batteries and determine if replacement is required or if batteries are still in good condition. Check if the battery replacement date will be passed before the next service and if so, replace the battery. The age of the battery should be marked on it with a label. Sealed lead acid batteries should be replaced at least every 2 years.
  - Restore the system to normal condition on completion of the service.

### 3.1.2.3 Yearly

**(a) The *Contractor* performs yearly servicing of Aritech Fire Detection and Video Fire & Smoke Detection (VFSD) Systems**

- The Aritech Fire Alarm System for the power station as detailed below are subjected to yearly servicing. These include panels for the following areas:
  - Surface Building Stores
  - Headrace
  - Surface Administration Building
  - Visitors Centre
  - Power House – Equipment Room
    - Main Aritech Panel
    - Aritech Repeater Panel
    - Unit 1 Generator Aspiration Unit
    - Unit 2 Generator Aspiration Unit
    - Unit 3 Generator Aspiration Unit

- Unit 4 Generator Aspiration Unit
- Lift Shaft Aspiration Unit
- Unit 1 Beam Detector
- Unit 2 Beam Detector
- Unit 3 Beam Detector
- Unit 4 Beam Detector

➢ Transformer Panels

- Generator Transformer 1 Panel
- Generator Transformer 2 Panel
- Generator Transformer 3 Panel
- Generator Transformer 4 Panel
- Service Transformer 1 Panel
- Service Transformer 2 Panel
- Station Transformer 1 Panel
- Station Transformer 2 Panel

- The Video Fire & Smoke Detection (VFSD) System for the power station as detailed below are subjected to yearly servicing.
  - ➢ Control Room Client PC Alarm Monitor
  - ➢ Security Office Client PC Alarm Monitor
  - ➢ Hub Enclosures
  - ➢ Camera Enclosures
  - ➢ Cameras
  - ➢ Lights

- Yearly servicing comprise of the following activities:
  - **Aritech Fire Alarm Systems**
    - Before start of any work, obtain the status condition of all the panels, record the status condition of all panels, record faulty device reference numbers, zones and the specific fault detail that are evident on the panels. The status condition before and after work is captured by the *Contractor* and submitted in a detailed report to the *Service Manager*.
    - Prepare for testing by reading through the logbook that is kept on the main panel in the control room. Any corrective action that has not yet been taken should be noted and carried out during this service.
    - Obtain a printout from the panel of all the faulty devices. Exchange faulty devices with replacement units, set to the same address. Where required, dirty sensors must be cleaned for re-use.
    - Obtain a printout of device analogue values. Compare these values to the permitted values for each point. Replace faulty devices or repair wiring.

- Print out a complete system configuration from the panel software. Compare this to the system specification and verify that the system zoning, input-output mapping, and other settings have not changed.
- Check the panel for any disabled devices and investigate the reason. Any faults must be rectified and any disabled devices must be enabled.
- Alarm Test:
  - Test one sensor or call point in each zone. Activate each point in turn, checking that the sounders operate and that the panel reacts correctly.
  - For remote panels, verify that the alarm is also generated on the main panel in the control room and that the description is displayed on the SCADA.
- Fault Test:
  - Remove one sensor in the system and check that the panel correctly reports the event.
  - For remote panels, verify that the fault indication is also generated on the main panel in the equipment room and that the description is displayed on the SCADA.
  - Accept the fault, replace the sensor and reset the panel.
- Visually inspect control panels and components for any signs of moisture ingress, damage, deterioration or any abnormalities.
- Check that all printed circuit boards are in a good condition, free of dust and securely mounted on the panel.
- Examine batteries and their connections. Test batteries and determine if replacement is required or if batteries are still in good condition. Check if the battery replacement date will be passed before the next service and if so, replace the battery. The age of the battery should be marked on it with a label. Sealed lead acid batteries should be replaced at least every 2 years.
- Input-output configuration test:
  - Verify by testing that the input-output mapping operates as programmed. Activate an input, such as a sensor, callpoint, or interface unit and verify that the correct outputs operate. Also check that the outputs function correctly.
- Inspect that no building changes have taken place that may affect the operation of the fire alarm system
- Restore the system to normal condition on completion of the service.

- **Video Fire & Smoke Detection (VFSD) System**
  - Before start of any work, obtain the status condition of the VFSD System for the Power Station and the Head Race, record the status condition of all panels, record faulty device reference numbers, zones and the specific fault detail that are evident on the panels. The status condition before and after work is captured by the *Contractor* and submitted in a detailed report to the *Service Manager*.
  - Any corrective action that has not yet been taken should be noted and carried out during this service. Check on the Client PC in the control room if there are any faulty cameras that need to be investigated. Any faults must be rectified and any disabled devices must be enabled.

- Obtain a printout from the Client PC of all the faulty devices. Exchange faulty devices with replacement units, set to the same address.
- Inspect cameras and determine if sensitivity of any of the cameras need to be adjusted.
- Examine the Equipment Rack for moisture ingress, damage, deterioration or any abnormalities.
- Inspect the uninterruptable powers supplies for the control room PC and the security office for operability.
- Alarm Test:
  - Test one camera in each zone. Activate each point in turn, checking that the main fire panel reacts correctly.
- Fault Test:
  - Disconnect a camera in the system and check that the panel correctly reports the event.
  - Accept the fault, reconnect the camera and reset the panel
- Visually inspect all HUB Enclosures and Camera Enclosures for any signs of moisture ingress, damage, deterioration or any abnormalities.
- Visually inspect all cameras and lights for damage, deterioration or any abnormalities and verify that all are in working condition.
- Examine batteries and their connections on all HUB and Camera Enclosures. Test batteries and determine if replacement is required or if batteries are still in good condition. Check if the battery replacement date will be passed before the next service and if so, replace the battery. The age of the battery should be marked on it with a label. Sealed lead acid batteries should be replaced at least every 2 years.
- Restore the system to normal condition on completion of the service.

- **Aspiration Systems**
  - Before start of any work, obtain the status condition of the Aspiration Systems by recording any faults and the specific fault detail that are evident on the panels. The status condition before and after work is captured by the *Contractor* and submitted in a detailed report to the *Service Manager*.
  - Perform fault-finding on the Aspiration Units that have standing faults and alarms to determine the cause of the faults and the alarms.
  - Proceed by clearing any standing faults and alarms.
  - Check the detector for any blockages and clear if required.
  - Inspect the condition of the filters and clean if required.
  - Liaise with the *Service Manager* on the required spares and the action to be taken to clear any faults that need replacement of spare items.
  - Visually inspect panels and components for any signs of moisture ingress, damage, deterioration or any abnormalities.
  - Check original design and verify if any changes have occurred.
  - Perform a smoke test to verify detector operation and time of activation from smoke exposure till triggering of alarm.
  - Simulate a fault to check the operation of the panel.
  - Examine batteries and their connections. Test batteries and determine if replacement is required or if batteries are still in good condition. Check if the battery replacement date will be passed before the next service and if so, replace the battery. The age of the battery should be marked on it with

a label. Sealed lead acid batteries should be replaced at least every 2 years.
- Restore the system to normal condition on completion of the service.

- **Beam Detectors**
  - Before start of any work, obtain the status condition of the Beam Detection Systems by recording any faults and the specific fault detail that are evident on the panels. The status condition before and after work is captured by the *Contractor* and submitted in a detailed report to the *Service Manager*.
  - Perform fault-finding on the Beam Detection Units that have standing faults and alarms to determine the cause of the faults and the alarms.
  - Proceed by clearing any standing faults and alarms.
  - Liaise with the *Service Manager* on the required spares and the action to be taken to clear any faults that need replacement of spare items.
  - Visually inspect panels and components for any signs of moisture ingress, damage, deterioration or any abnormalities.
  - Perform a test to activate the beam alarm and verify if the alarm registers locally at the panel and remotely on the fire alarm panel in the equipment room.
  - Simulate a fault to determine if a fault condition register on the local panel and remotely on the fire alarm panel in the equipment room.
  - Examine batteries and their connections. Test batteries and determine if replacement is required or if batteries are still in good condition. Check if the battery replacement date will be passed before the next service and if so, replace the battery. The age of the battery should be marked on it with a label. Sealed lead acid batteries should be replaced at least every 2 years.
  - Restore the system to normal condition on completion of the service.

**(b) The *Contractor* performs yearly functional testing of fire detectors on Aritech Fire Detection and Video Fire & Smoke Detection (VFSD) Systems**

- The Aritech Fire Alarm System and Video Fire and Smoke (VFSD) System for the power station are subjected to yearly functional testing. These include systems installed in the following:
  - Surface Building Stores
  - Headrace
    - Aritech Fire Alarm System
    - VFSD System
  - Surface Administration Building
  - Visitors Centre
  - Power House
    - Aritech Fire Alarm system
    - VFSD System

- Yearly functional testing comprises of the following activities:
  - Annual functional testing of all fire detectors and callpoints covering the power station, headrace, surface building stores area, visitors centre and transformer areas are carried out.
  - Note, Annual functional testing of detectors and callpoints for the transformers are carried out differently to the stations fire alarm system detection devices due to the fact that the transformer fire detection devices are interfaced to the operation of the water-foam protection systems on the transformers. Testing of fire detectors and callpoints on the transformers coincide with outages on the equipment or the respective systems are isolated to ensure that testing will not cause spurious operation of the fire protection systems. Liaise upfront with the *Service Manager* on suitable dates for the tests and access requirements.
  - All fire detectors and call points are covered over the year period and provision is made for the necessary resources to conduct the testing.
  - Testing of the Video Fire & Smoke Detection (VFSD) System is accomplished using an approved OEM VFSD device. Note that no open flames will be used for activating the cameras.

***(c) Gas Suppression Systems***

The Detectors forming part of the gas suppression systems are required to be tested yearly.

This test would be from detector through controller and main FDS panel to end point where operator receives alarm.

This testing should be done in conjunction with Suppression system service contractor to ensure correct procedures are followed.

### 3.1.3 Reactive Maintenance

Unplanned repairs required for restoring operating conditions, plant or equipment are to be avoided. The *Contractor* shall be available to perform inspections and repairs for call outs that involve unforeseen defects that have occurred on the systems. Reactive work shall negatively impact on the performance indicators of the *Contractor* as an occurrence and the reaction itself shall be measured against fixed quality parameters.

The *Contractor* ensures that a 24-hour per day, 365 days per year facility is available throughout the contract period under the following minimum criteria:

- A landline (office) phone number for calls during normal working hours.
- A cell phone number shall be available 24-hour every day of the year, for all emergency calls.
- An alternative cell phone number (should the first number not be available)
- A call centre is not a prerequisite but is advisable.

Should neither of the cell phone numbers be unavailable during an emergency, an e-mail to the domicilium address shall be sent and an alternative *Contractor* sourced immediately to provide the service under the same contractual conditions at the expense of the *Contractor*.

Reactive maintenance shall be charged at fixed rates as set out in the Pricing Schedule which shall include all supervision, labour, travelling expenses and general costs to attend to the stated level of reactive work. The *Contractor* submits the work that is to be performed for acceptance to the *Service Manager* beforehand, no claim shall exist for work performed without an *Employer* approved order number issued by the *Service Manager*.

### 3.1.3.1 Fire Detection System Defects

In the case of callouts, the response time for critical situation shall be within 24 Hours. In the case of non-critical situations, the callout Response time will be within 72 Hours. Transport claims to the station will be limited to a radius of 100 (One Hundred) kilometres.

The following process shall be followed when a defect has been identified and needs to be rectified by the *Contractor*.

- The *Service Manager* informs the *Contractor* of the equipment failure as per Section 3.1.7
- The *Contractor* responds to the *Service Manager* within the required response time with details of response team and timelines to perform initial investigation.
- The *Service Manager* provides the *Contractor* with a Purchase Order for the call out.
- The *Contractor* performs the initial fault finding and perform the necessary repairs where possible as per section 6.3.2. If fire detection system and gas suppression systems equipment repair require additional spares and/or work the *Contractor* informs the *Service Manager* and provide a quotation within three working days.
- The *Service Manager* verify the quotation and accept as per section 6.3.3. If the quotation is not acceptable the *Service Manager* will liaise with the *Contractor* to clarify and resolve any queries. Once quotation is accepted by the *Service Manager* the Purchase order will be updated as per the agreed quotation for the spares and/or additional work.
- The *Contractor* performs the final repairs to put the fire detection system and gas suppression systems equipment back in operation once the spares are available.
- The *Contractor* informs the *Service Manager* of the completed work and submits the invoice for the repairs as per section 5.5.
- A permit to work shall be in force for any work to be carried out by the *Contractor.*

## 4. INTERPRETATION AND TERMINOLOGY

The following abbreviations are used in this Service Information:

| **Abbreviation** | **Meaning given to the abbreviation** |
|---|---|
| OBL | Outside battery limits |
| OEM | Original Equipment Manufacturer |
| SAQCC | South African Qualification and Certification Committee |
| SCADA | Supervisory Control and Data Acquisition |
| PPE | Personal Protective Equipment |
| ESKOM | Electricity Supply Commission |

| | |
|---|---|
| km | kilometre |
| MW | Megawatt |

## 5. MANAGEMENT STRATEGY AND START UP.

### 5.1 The *contractor*'s plan for the *service*

The *Contractor* shall provide, at the time of tendering and as a compulsory returnable document, a detailed service schedule (in Gantt format) outlining the intended frequencies anticipated to fulfil the objective as stated in the scope of work (The intended frequencies shall be priced accordingly in the pricing schedule). The *Service Manager* shall use this plan to anticipate expected *Contractor* activities in-and-around the premises as per section 5. This plan shall start on the indicated contract start date and shall include the entire contract period.

A financial cash flow projection shall be attached to the plan indicating the intended invoicing dates and amounts as for the entire contract period.

The availability of materials intended for use, including the approval timeframe thereof, shall also be indicated on the plan.

Meetings shall be indicated on the plan as stipulated in section 5.2.

### 5.2 Management meetings

Meetings shall be held to mutually promote and to pro-actively and jointly manage the administration of the contract with the objective of minimising the adverse effects of risks and surprises for both Parties.

The following will be discussed (amongst others): Safety, compensation events, subcontracting, overall co-ordination and other matters of a general nature. Separate meetings for specialist activities such as planning and activities of a technical nature will also be discussed as indicated below.

Meetings of a specialist nature may be convened as specified elsewhere in this Service Information or if not so specified by persons and at times and locations to suit the Parties, the nature and the progress of the *service*. Records of these meetings shall be submitted to the *Service Manager* by the person convening the meeting within five days of the meeting.

All meetings shall be recorded using minutes or a register prepared and circulated by the person who convened the meeting. Such minutes or register shall not be used for the purpose of confirming actions or instructions under the contract as these shall be done separately by the person identified in the *conditions of contract* to carry out such actions or instructions.

### 5.3 *Contractor*'s management, supervision and key people

A detailed service organogram of the Company's Branch, indicating specifically Operating officers, financial officers, Communication / liaison personnel and technical staff intended for this contract are required as a tender returnable and are to be kept updated during the entire duration of the contract. Changes in the structure must be communicated to the *Service Manager* immediately of it coming into effect.

The Organogram shall include current contact details and emergency response (24-hour) information.

### 5.4 Documentation control

All documentation requires a unique, sequential number and all deviations contained therein clearly described. Contractual communications will be in the form of properly compiled letters or forms attached to e-mails and not as a message in the e-mail itself.

The *Service Manager or the Delegated Person* shall in all instances be the point of communication (addressee) and no direct communication between persons involved in the contract shall be allowed. Such communication shall be disregarded.

#### 5.4.1 General

Each instruction, certificate, submission, proposal, record, acceptance, notification and reply is communicated in a form which can be read, copied and recorded and in the language of the Contract, within the period for reply or any other period agreed between the parties prior to its due date. Any such communiqué must bear the signature of the author; emails therefore do not conform except when used as a transmittal medium.

#### 5.4.2 Minimum requirements

All documents shall be in simple and clear English; and always reference to applicable NEC TSC3 clause under (or as a result of) which it is communicated.

#### 5.4.3 Use of standard forms

The *Service Manager* and the *Contractor* will use the standard NEC3 TSC.

#### 5.4.4 Communication

All Communication is addressed to the *Service Manager* as applicable to the TSC. All communication makes reference to:

- The Contract Number that is issued by the *Employer (*normally a 46000…..*)*
- The Contract title.
- Any previous reference relating to the specific communique
- The Specific TSC clause under which the communication is issued;
- Whether a reply is required and
- A unique letter reference number.

The unique reference number to be used for written correspondence between the *Service Manager* and *Contractor* and vice versa is as follows:

From the *Service Manager* to the *Contractor:* 46000 .. ... E/C 0xxx; and from the *Contractor* to the *Service Manager* 46000 C/E 0xxx referring to the Contract number and the next sequential letter (channel) number

## 5.5 Invoicing and payment

All Invoices submitted for payment shall make reference to the pricing schedule's alpha-numeric order and description (may be shortened). Please revert to 2.5 regarding financial reporting.

Within one week of receiving a payment certificate from the *Service Manager* in terms of core clause 51.1, the *Contractor* provides the *Service Manager* with a tax invoice showing the amount due for payment equal to that stated in the *Service Manager*'s payment certificate.

a) The *Services Manager* to be copied in on all electronic invoices emailed.
b) Failure to submit the invoice to the correct address could result in delays in payment.
c) The *Contractor*'s Tax Invoices comply with the requirements as stated in clause Z7 of the Contract Data
d) Invoices are submitted electronically to:
    - Local Eskom Invoices - invoiceseskomlocal@eskom.co.za
e) Details required when submitting invoices and additional data:
    - The subject line on your email should only contain your vendor number
    - Each invoice in PDF should be named with your invoice number only
    - All electronic invoices are be sent in PDF format only
    - Attach the proof of delivery to your invoice
    - Where applicable, supporting documents are be attached to the scanned PDF invoice as one attachment
    - A copy of the signed assessment certificate
    - Any other appropriate documents,
    - Other requirements:
    - Ensure compliance with the tax requirements for submitting invoices electronically
    - Each PDF should contain one credit note, one debit note or one credit note only. More than one invoice can be submitted per email
    - Any CPA applicable are be invoiced separately, so that if there are issues on the CPA, the rest of the invoices can be paid while the CPA issues are resolved
f) Include the following information on the Invoice:
    - Name and address of the Contractor and the Service Manager;
    - The contract number and title;
    - Contractor's VAT registration number;
    - The Employer's VAT registration number 4740101508;
    - Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;
    - Contractor's company registration number if applicable
    - Contractor's banking details
    - Name and address of recipient
    - Tax invoice number and date of issue,
    - Description of goods/service provided,
    - Quantity or volume of goods/services
    - Period time for which the Tax Invoice is being rendered,
    - Relevant Task Order Number (commencing with a 45 prefix),
    - Relevant line item number,
    - Statement whether value added tax is included or excluded.

## 5.6 Contract change management

The use of Standard forms is encouraged and is obtainable from the *Service Manager* for instances like compensation events Contract change management is managed in accordance with clause 6 of the core clauses in TSC3.

### 5.7 Records of defined cost to be kept by the *Contractor*

In order to substantiate the *Defined Cost* of compensation events, the *Employer* requires that the *Contractor* to keep the following,

- Record of Labour charges
- Record of material charges
- Record of Equipment Charges

These records need to be available on an excel spreadsheet in case of a compensation event is agreed on.

### 5.8 Insurance provided by the *Employer*

Queries regarding insurance claims and/or procedures can be addressed with the *Service Manager*.

### 5.9 Training workshops and technology transfer

Not Applicable

### 5.10 Design and supply of equipment

The scope of the work is described in this specification. No alteration to- or on equipment is allowed without the written consent of the *Service Manager*.

### 5.11 Things provided at the end of the *service period* for the *Employer*'s use

Not Applicable

#### 5.11.1 Equipment

None

#### 5.11.2 Information and other things

The *Contractor* hands over the file with service records.

This file shall contain all contract data including, but not limited to, all communication, instructions, compensation events, disputes, warnings, certificates, reports and health & safety instructions.

### 5.12 Management of work done by task order

a) All work is managed through a Task Order.

b) The process for placing a Task Order is:

i. A Task Order Request is issued by the *Service Manager* to the *Contractor*

ii. The *Contractor* prepares and submits a Task Order quote to the *Service Manager*

iii. The *Service Manager* assesses the Task Order quote for acceptability and conduct clarification with the *Contractor* if required

iv. The *Service Manager* accepts the Task Order quote by issuing the Task Order and PO to the *Contractor*

### 5.13 Health and safety risk management

- The *Contractor* complies with the South African Occupational Health and Safety Act No. 85 of 1993 and regulations, Eskom Safety, Health, Environment and Quality (SHEQ) Policy 32-727, National Building Regulations as well as SANS 10400 for all works. Furthermore, the *Contractor* comply with any additional current statutory requirements of any relevant Government Departments regarding health and safety and environmental health.
- The *Service Manager* instruct the *Contractor* to stop work, without penalty to the *Employer*, when the *Contractor's* personnel do not adhere to acceptable health & safety standards or contravene the health and safety sections and regulations. The *Service Manager* is immediately or before the end of a particular shift, informed of any injury or damage to property or equipment. The *Contractor* provides all the required safety and personal protective equipment to his staff for the duration of the contract.
- Affected Property SHE Specification, procedures, policies, guidelines, and standards applicable to the *service*, used as Eskom's minimum requirements for Health and Safety, are provided to the *Contractor*.
- The *Contractor* complies with the requirements for COVID-19 as per Government Directive from Department of Employment and Labour (DEL); Consolidate COVID-19 Direction on Health and Safety Measures in Workplaces issued by the Minister in terms of Regulation 4(10) of the National Disaster Regulation.
    - Only the latest version / revision of the applicable legislation, acts and regulations throughout the duration of the contract, is applied at the Peaking stations. Not limited to the following below, the legislation, acts and regulations that the Contractor complies with are:
    - Compensation for Occupational Injuries and Diseases Act 130 of 1993
    - National Water Act 36 of 1998
    - Occupational Health and Safety Act and Regulations (85 of 1993)
    - Disaster Management Act 57 of 2002.
    - National Environmental Management Act 107 of 1998
    - Applicable South African National Standards (SANS)
    - National Road Traffic Act 93 of 1996
    - Basic Conditions of Employment Act 75 of 1997
    - National Veld and Forest Fire Act and Regulations 101 of 1998
    - Environmental Conservation Act and Regulations 73 of 1989
    - Committee of Land Transport Officials (COLTO)
    - SACPCMP Act no. 48 of 2000
    - Radiation Protection Act
    - Construction Regulation

The *Contractor* establish and adheres to the health and safety of his own employees and those of its sub-contractors so that high standards of personnel health and safety are achieved and maintained. The *Contractor* exercise and adheres to all necessary care and measures to preclude exposure of personnel, labour, and nearby residents (if any) to potential health hazards and environmental pollutants.

The *Contractor* ensures that all persons who are employed and or deployed to work on the Affected Property undergo police clearance and are certified to have no criminal records. This is required before any of the *Contractor's* employees are allowed or given access to start work on Affected Property.

**Suspension of works and services under a contract**

Any person may stop an activity, unsafe act or unsafe condition that poses or may pose a threat to the health and safety of an individual or create a risk of degradation of the environment. This includes any unauthorised work or service performed by or legally or contractually non-compliant acts or omissions by a supplier or such supplier's subcontractor or supplier.

Work stoppages that are initiated due to SHE concerns, non-compliance or poor performance related to the supplier's works or services, shall not warrant any financial compensation claim lodged against Eskom where the supplier has not met the requirements defined legally or contractually.

Work stoppages will be classified in accordance with the following and the applicable Eskom Work Stoppages shall be adhered to:

Temporary stoppage of activity(s)/task(s) due to SHE concerns, including the following circumstances:

Ad hoc work stoppages by Eskom management –at the discretion of the Eskom senior management, all work of a similar nature may be stopped due to the occurrence of a fatal or serious incident, and the applicable suppliers will be required to comply with and/or verify the conditions stipulated in the work stoppage instruction pack.

Stoppage /suspension/termination of contract

The contract custodian as defined in the Eskom contract with the main supplier will be the authorised person to communicate the stoppage/suspension / termination of the contract after seeking advice from Eskom's Legal Department and approval from the Business Unit Management.

In addition to the requirements of the laws governing health and safety, Eskom may have some additional requirements particular to the *service* and the Affected Property for this contract:

**Health, safety and the environment:**

The *Contractor* undertakes to take all reasonable precautions to maintain the health and safety of persons in and about the execution of the *service*. Without limitation the *Contractor*:

accepts that the *Employer* may appoint him as the "Principal Contractor" (as defined and provided for under the Construction Regulations 2003 (promulgated under the Occupational Health & Safety Act 85 of 1993) ("the Construction Regulations") for the Affected Property;

warrants that the total of the Prices as at the Contract Date includes a sufficient amount for proper compliance with the Construction Regulations, all applicable health & safety laws and regulations and the health and safety rules, guidelines and procedures provided for in this contract and generally for the proper maintenance of health & safety in and about the execution of the *service*; and

undertakes, in and about the execution of the *service*, to comply with the Construction Regulations and with all applicable health & safety laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.

The *Contractor* shall comply with the health and safety requirements.

**Health, safety and the environment File submission:**

The Contractor is expected to ensure that adequate time is allocated for the approval of their Safety, Health and Environmental (SHE) File. This compulsory document must be prepared before an appointment with the Health & Safety Officer is made. The Health & Safety Officer will, upon receipt of this document, and after ten working days, approve or reject the submission. No work shall start before the approval of the Health, Safety & Environmental File. Should the Contractor fail to rectify the shortcomings as outlined by the Health & Safety Officer, then Section 3.1.2 will apply.

The SHE file is submitted to the *Services Manager* for review and acceptance, 60 days before the commencement of the *service* on the Affected Property and includes, but are not limited to the following:

- Safety, Health and Environmental Plan (SHE Plan)
- SHE organization within the Company-Responsibility & Accountability
- OHS Incident management Procedure (32-95)
- Planning of conduct of work activities including planning for changes and emergency work (Operational Plan)
- Management of PPE - Personal Protective Equipment (Procedure with the matrix)
- Emergency planning and fire risk management
- Vehicle and driver behaviour safety (Competency, Traffic Management, etc.)
- Sub-contractor or supplier selection and management
- Key personnel competency, training, appointments
- Communication and awareness Plan
- Behavioural Based Safety Procedure
- *Employer's* Baseline SHE Risk Assessment (BRA).
- *Contractor's* Baseline Risk Assessment in line with the *Employer's* BRA (Identification, assessment and management of Safety, Health and Environmental risks related to the scope of work. The methodology used for the risk assessment is provided together with the BRA.)
- Valid Letter of Good Standing (COIDA or equivalent)
- SHE policy signed by CEO / MD - Complying to OHS Act Section 7 or ISO 45001
- Occupational hygiene and health risk assessment
- Medical surveillance
- Method Statements / Safe Working Procedures
- COVID-19 Risk Assessments and Workplace Plan

Only after the **SHE file** met all the requirements and are approved by the OHS department the *Employer's representative* will arrange with the OHS department for the *Contractor's* employees to attend Induction. The *Contractor's* personnel attend an induction meeting on the Affected Property and sign the attendance register provided.

*Contractor* will not be allowed to participate in any Eskom Plant activities before Induction was attended.

In addition, reference is made to Health and Safety Specification, for documents and policies which the *Contractor* is required to adhere to.

The *Contractor* is responsible for the safety and security of his/her personnel, equipment on the Affected Property and the *Service*.

The *Contractor* applies safety awareness through continuous training of its workforce and Sub-*Contractors*.

The *Contractor* is responsible for the safety and security of the materials (on the Affected Property) required for the *Service*.

The *Contractor* adheres to the safety regulations pertaining to the power station.

The *Contractor* adheres to the safety regulations pertaining to working at height where training certificates to work at heights are mandatory.

The ***Employer's*** Safety Risk Management Directive for *Contractors* is provided to the *Contractor.*

The *Contractor* shall ensure that its Employees are provided with adequate PPE with clearly identifying motifs for the Affected Property *Service* they may provide and are in accordance with the requirements of General Safety Regulation 2(1) of OHSA and further ensure that its Employees wear the PPE issued to them at all relevant times.

Medical fitness and Working at heights/elevated positions certificates are required before commencing work. The *Contractor* ensures that all persons who work at height and those who are required to do rescue at height are trained according to the relevant unit standards. As a minimum, individuals who work at height and are not responsible for performing a rescue must undergo three days of FAS training (Unit Standard 229998), and the rescuers must furthermore undergo two days of rescue training in accordance with unit standard 229995. Rescuers are to be appointed in writing for that particular Affected Property/project.

The *Contractor* may identify further training (e.g. Advanced rescue US229999) applicable to the scope of work, and ensure that their employees are trained.

Only training providers that use competent training instructors and assessors who are SETA-accredited and SAQA-registered in terms of the relevant unit standards may be used.

Regarding Work in heights/elevated position the *Contractor* ensure that its Employees work in accordance with the requirements of General Safety Regulation 6 of OHSA

The *Contractor* shall ensure that all the plant, machinery, equipment it may wish to utilise on the Affected Property is/are at all times of sound order and fit for the purpose for which it is intended, and that it complies with the requirements of General Safety Regulation 10 of OHSA

The *Contractor* complies with Eskom's transport requirements while performing contract work for Eskom.

Without prejudice to any other requirements of this *Service* Information or the Conditions of Contract, the *Contractor* complies with the following:

Eskom Life-saving Rules Directive 240-62196227

All equipment can be tested on the Affected Property, but if equipment is to be taken out of the Power station Boundaries, then the insurance for and responsibility of the items will be borne by the *Contractor*. Preliminary and general expenses must be accounted for separately and will apply to the testing of all of the items listed. A reduction in scope will not affect the aforementioned tariff.

Minimum Safety Constraints:

- Competencies (training)
- Risk Assessment
- Letter of Good Standing
- Valid accreditation certificate issued by the accreditation authority
- Proof of accreditation
- Medical Certificates or procedure for such implementation

Five Life Saving Rules have been developed that will apply to all Eskom employees, agents, consultants and *Contractors*.

**Rule 1:** Open, Isolate, Test, Earth, Bond, And/Or Insulate before touch - that is any plant operating above 1000 V.

**Rule 2:** Hook up at heights - no person may work at height where there is a risk of falling.

**Rule 3:** Buckle up – no person may drive any vehicle Eskom premises: unless the driver and all passengers are wearing seat belts. Eskom takes a "ZERO TOLERANCE" attitude to drivers and passengers who do not wear safety belts when driving in any vehicle on Eskom Business and/or on Eskom premises. The violation of this very important safety rule as well as any safety rule while performing work for or on behalf of Eskom may result in Eskom terminating your obligation to perform work in terms of your contract with Eskom. All occupants must wear their safety belts properly, and must never put the shoulder belt under their arm or behind their backs. Drivers and all passengers must buckle-up at all times for the sake of themselves and their families.

**Rule 4:** Be sober (no person is allowed to work under the influence of drugs and alcohol.

**Rule 5:** Use a permit to work – where an authorization limitations exists, no person shall work without the required permit to work.

**Plant Safety Regulations:**

The *Contractor* requests the *Employer's Representative* to arrange the isolation of the plant from all sources of danger as described in the Plant Safety Regulations.

The *Service Manager* shall, on request, make available a copy of the latest revision of the Plant Safety Regulations to the *Contractor* when it is a requirement for the *Contractor* to be trained and authorised in terms of the PSR.

The *Contractor* shall conform to all rules and regulations applicable to Plant Safety and shall complete the Workman's Register prior to working on the plant.

**Fire Precautions:**

Any tampering with the *Employer's* fire equipment is strictly forbidden.

All exit doors, fire escape routes, walkways, stairways and stair landings and access to electrical distribution boards must be kept free of obstruction and is not be used for work or storage at any time. Firefighting equipment must remain accessible at all times.

In case of fire, report the location and extent of the fire to the control room.

It is expected that the *Contractor* take the necessary action to safeguard the area in order to prevent injury and spreading of the fire.

**Reporting of Accidents:**

The *Employer* follows an accident prevention policy which includes the investigation of all accidents involving personnel and property. This is done with the intention of introducing control measures to prevent a recurrence of the same incident. The *Contractor* is expected to co-operate fully to achieve this objective. The *Service Manager* must be informed immediately of any Category B or C incidents. Category A incidents and any damage to property or equipment must be reported to the *Service Manager* within 24-hours.

**NOTE:** This report does not relieve the *Contractor* of his legal obligation to report incidents to the Department of Labour, or to keep records in terms of the Occupational Health and Safety Act, and Compensation for Occupational Injuries and Diseases Act.

**Speed Limit:**

All vehicles must be driven with due consideration for personnel and property. Maximum speed limit will be always adhered to on the premises.

**Health and Safety Arrangements:**

- The *Contractor* must ensure that all his personnel attend a Health and Safety Induction Course prior to starting with the *Service*. A one- (1) hour course will be provided by the *Employer* and will be valid for the duration of one- (1) year.
- Safety Risk Management has the right and authority to visit and inspect the *Contractor's* workplace or Affected Property establishment to ensure that tools, machinery and equipment comply with the minimum safety requirements.
- The *Employer's Representative* are entitled to instruct the *Contractor* to stop work, without penalty to the *Employer* where the *Contractor's* personnel fail to conform to safety standards or contravene health and safety regulations.

**Transportation of passengers: open LDV's:**

With effect from 31 May 2006 no *Eskom employee* or *Contractor* would be allowed to transport passengers on the back of open light delivery vehicles (LDV's). It is a legal requirement to provide safe transportation of *Eskom* and *Contractor* employees – therefore the following will be enforced:

- Ensure that no employee, including *Contractor* employees or any other person, when on an Eskom Affected Property and/or performing work for Eskom, is allowed to be transported in the back of open vehicles.
- There will be cases where this may not be reasonable or practicable, namely where vehicles are used during line inspections on sites or on private roads, or similar cases, and in these cases such vehicles must be driven at less than 30km per hour or at a speed suitable to the prevalent conditions. In such cases, the carrying of passengers in the back of such open vehicles could be explicitly allowed, after:
- a risk assessment has been carried out, indicating a very low risk;
- mitigating factors have been identified to control any risk identified;
- proper seating and handrails have been provided on the back of the open vehicle:
- these measures have been discussed at the relevant Health and Safety Committee Meeting and approved by the *Employer.*
- is defined and contained in a formal written division's or BU's policy, including the appropriate mitigating factors;
- such a policy has been communicated to all employees and *Contractors*.
- The above risk assessment findings/outcomes must be available at all times for audit purposes.
- Tools and equipment must be properly secured.
- Only authorised drivers may transport passengers.
- Proof must be submitted on request in terms of valid roadworthiness of the vehicle/s.
- The above must apply to on the Affected Property and off the Affected Property transportation of passengers.

No person may be transported in the back of vehicles closed by means of canopies, unless provided with factory-fitted or manufactured-approved, proper seating and safety belts, i.e. crew cabs.

The driver must ensure that no employees are transported in the back of open vehicles unless it is allowed in terms of a divisional or BU-specific policy as referred to in paragraph f). This also applies to *Contractor* and *Contractor* employees when performing work for Eskom.

The driver must ensure that all canopies are being properly fitted and secured and that all loose tools and objects in vehicles are properly secured.

The driver must ensure that their passengers are seated and wear seatbelts at all times.

### 5.14 Environmental constraints and management

The *Contractor*, in and about the execution of the *service*, complies with all applicable environmental laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.

**Environmental Standard:**

**Legislation:**

Comply with all environmental legislation of South Africa in respect of controlling air pollution, water pollution and waste disposal, etc.

**Green Practices:**

The *Contractor* must carry out good environmental practices in carrying out the works for conserving the global & local environment. Such practices shall include but not be limited to the replacing all chemical based cleaning agents by other natural/organic alternatives when such chemicals is provided by the *Contractor*.

During sweeping and dusting, the *Contractor* shall ensure that a minimum amount of dust is liberated into the atmosphere. The use of compressed air for cleaning is prohibited.

**Waste Management**

Domestic – all bins must be replenished with plastic disposable bags and when full moved to the designated waste areas within each area of the works.

No waste material must be accumulated or stored anywhere other than in the designated area.

### 5.15 Quality assurance requirements

The quality requirements are as per ISO 9001:2008 and as per Eskom document 240-105658000, SUPPLIER CONTRACT QUALITY REQUIREMENTS SPECIFICATION.

The *Contractor's* company quality documents are subject for verification and acceptance by Eskom.

# 6. Procurement

## 6.1 People

### 6.1.1 Minimum requirements of people employed

Requirements as set out in 3.1 shall be adhered to. In addition, training conducted for key personnel in terms of the Skills Development Act of 1999 and that assurance that all training conducted has been done through, or has been governed by, the SETA.

A curriculum Vitae of each person shall be submitted at the time of tender and if and when personnel changes occur. This shall be noted in the compulsory organogram and updated.

Staff shall be classified as per SANS 10147 (D4) et al.

Foreign employees to have valid work permits.

### 6.1.2 BBBEE and preferencing scheme

With confirmation of its B-BBEE Status by submitting an updated Verification Certificate by no later than 30 (thirty)

*Contractor* to ensures the *Service Manager* has an updated valid certified copy of BBBEE certificate or sworn affidavit during contract period. Failure to do so, could result in Eskom Vendor Management Department blocking vendor details on Eskom vendor management system which affects payment processing of invoices.

**Supplier Development and Localisation**

Not Applicable

## 6.2 Subcontracting

### 6.2.1 Preferred subcontractors

No Nominated Subcontractors.

### 6.2.2 Limitations on subcontracting

The *Contractor* shall not sub-contract more than 20% of the work. This will not apply to any documentational work at/during tender stage.

### 6.2.3 Attendance on subcontractors

State entry and attendance requirements, adherence and constraints are the same as for the *Contractor*.

## 6.3 Plant and materials

### 6.3.1 Specifications

None

### 6.3.2 Correction of defects

All defects identified to be corrected immediately or if not possible, the *Contractor* notifies the *Service Manager*.

### 6.3.3 *Contractor*'s procurement of Plant and Materials

The *Contractor* provides the *Employer's representative* with a quotation with the agreed markup percentage for all materials, parts and spares required to perform repairs. The *Contractor* attaches the Vendor's invoice or proof of purchase together with the *Contractor's* quotation as supporting evidence. The warrantees from suppliers are to be in favour of the *Employer* and not just the *Contractor*.

### 6.3.4 Tests and inspections before delivery

Where applicable, material, dimensional, material safety data sheets (MSDS) and pressure test certificates are required for parts and equipment supplied or for any refurbishments/reconditioning conducted by the *Contractor*.

The *Service Manager* may request to inspect Plant and Materials together with the *Contractor* on arrival before the use on the Affected Property and from time to time during execution. The *Contractor* keeps records of such inspections and the records be available for *Service Manager* on request. Findings from these inspections will be tracked in the monthly meetings.

### 6.3.5 Plant & Materials provided "free issue" by the *Employer*

None

### 6.3.6 Cataloguing requirements by the *Contractor*

None

## 7. Working on the affected property

### 7.1 Working on the affected property

Drakensberg Power Station is a National Key Point. All persons intending to perform work and/or attend meetings during this contract period comply with the following:

The *Contractor* adheres to all Life Saving Rules as specified. The *Employer* does not permit any passengers to be transported at the back of any Truck, light domestic vehicle or enclosed light commercial vehicle. Each person shall sign the Affected Property entrance register and this information shall also be collated by the *Contractor* for use during the scheduled meetings. All *Contractor* personnel are in possession of Security clearance. Verification records are submitted as part of the safety file together with ID copies. The *Employer* reserves the right to refuse entry to all persons with criminal records.

- Original Identity document (ID) or passport is presented to Security on arrival
- No weapons may be taken on site
- No drugs allowed on site
- No explosives allowed on site

- No firearms and ammunition allowed on site
- No photographs may be taken whilst on site
- All persons entering the Employer s premises undergo a breathalyser test. Any persons testing positive is not allowed entry. The *Employer* has a zero tolerance towards alcohol.
- Tool registers is verified on arrival by security personnel
- Only reverse parking is allowed on the Affected Property General access to the station is controlled and it is mandatory that the *Contractor* adheres to all security regulation in force during the period of the contract.

The *Contractor* is required to submit proof of verification record(s) (Security clearance) from SAPS or accredited supplier linked to SAPS AFIS system not older than thirty (30) days before access to the Affected Property is granted.

*Contractor* is required to submit the SAPS Clearance Certificates obtained for all his employees along with copies of their Identity Documents to the Affected Property Security Manager for verification. Only individuals with clear criminal records will be considered.

### 7.2 People restrictions, hours of work, conduct and records

**ESKOM does not permit any passengers to be transported at the back of any Truck, light domestic vehicle or enclosed light commercial vehicle.**

All Cardinal rules as specified shall be adhered to.

The premises may be entered from 08:00 to 16:00 Mon-Thu, excluding public Holidays and from 08:00 to 12:00 on Fridays. Each person shall sign the Affected Property entrance Register and this information shall also be collated by the *Contractor* for use during the scheduled meetings.

Parking is allowed in the demarcated areas only and should it be required to drive on Affected Property, then please adhere to the following;

Maximum speed is 20km/h

Obey all road signs

Damage to ESKOM's plant/ property will be for the *Contractor's* account.

### 7.3 Health and safety facilities on the affected property

All *Contractor* employees and intended sub-contractors must attend a compulsory induction meeting at the start of the Contract period.

The required Health & Safety files, complete with all of the requirements thereto, must be submitted, completed and approved before the start of the contract period (refer Section 3.1.5).

### 7.4 Environmental controls, fauna & flora

The *Contractor's* attention is drawn to the fact that the *Employer's* Power Stations are situated in highly sensitive areas with respect to the environment.

The *Contractor* acquaints himself with all statutory and local environment regulations and adheres to these without exception.

The *Contractor* complies with the Hazardous Chemical Regulations, GNR. 1179 of 25 August 1995 as amended by GNR.930 of 25 June 2003 and GNR.683 of June 2008 when using any hazardous chemicals, as well as complying with the requirements of the National Environmental Management Act of 1988.

The *Contractor* will be required to ensure that all *Services* are carried out as per the ISO 14001 standard and Eskom's Environmental Policy. The following environmental requirements are complied with at all times:

- Zero liquid effluent discharge.
- No chemicals will be dumped into the station drains or on the premises.
- No oil or waste will be dumped in an unauthorised area or unlicensed waste site.
- Asbestos will be handled and stored according to Act 15 of 1973 (hazardous substances Act).
- No materials or waste will be burnt on the Affected Property. Hazardous substances shall be handled and stored according to the hazardous substances Act no 15 of 1973. No effluent shall be discharged into the public streams.
- Construction Safety, Health, and Environmental Management Rev. 0 32-136

**Waste Disposal:**

All waste introduced to and/or produced on the *Employer's* premises by the *Contractor* for this contract, must be handled in accordance with the minimum requirements for the Handling and Disposal of Hazardous Waste in terms of Government Legislation as proclaimed by the Department of Water Affairs and Forestry Act, 1994 Ref: ISBN0621-16296-5.

**Hazardous substances**

If product is classified as a hazardous substance, safety brochures must accompany delivery. In accordance with the Occupational Health and Safety Act (OHSA), Act 85 of 1993 section 10 and 11. If any hazard is identified by the *Contractor*, he must immediately inform the *Service Manager.*

### 7.5 Cooperating with and obtaining acceptance of Others

The *Contractor* co-operates with and does not delay, impede or otherwise impair the service of Others.

### 7.6 Records of *Contractor*'s equipment

The *Contractor* shall, before entering the Affected Property for the first time, provide a comprehensive list of all equipment and tools intended for use during the contract period, to the *Service Manager.* Access will be postponed until such time as the inventory is approved and available at each Affected Property visit.

Material intended for use shall be approved beforehand as stipulated. The exact amounts consumed during a particular service visit must be declared and reconciled in order to reflect on the quarterly report.

### 7.7 Equipment provided by the *Employer*

None

### 7.8 Affected Property services and facilities

#### 7.8.1 Provided by the *Employer*

The *Service Manager* shall make available to the *Contractor*, or their representatives, the following facilities during the contract period:

Toilets and ablution facilities.

Eating amenities in the Powerhouse.

First-aid in the Powerhouse building.

The *Contractor* shall provide everything else necessary for providing the Service.

#### 7.8.2 Provided by the *Contractor*

The *Contractor* makes provision for all required Affected Property services and facilities.

### 7.9 Control of noise, dust, water and waste

The control of noise, dust, water and waste shall be as expressed in the environmental requirements for the Affected Property.

### 7.10 Hook ups to existing works

As far as practicable, all work will be conducted at ground level. Should any hook-ups be required for specific work, please consult with the *Service Manager*.

### 7.11 Tests and inspections

#### 7.11.1 Description of tests and inspections

Inspections will be carried out by the Health & Safety Officer, the Environmental officer and the *Service Manager* periodically. This information will be shared during the quarterly meetings.

Inspections carried out by the *Contractor*, specifically those intended for the prevention of harbouring areas, must be recorded and recommendations communicated with the *Service Manager* as soon as it becomes apparent.

#### 7.11.2 Materials facilities and samples for tests and inspections

None

## 8. List of drawings

### 8.1 Drawings issued by the *Employer*

This is the list of drawings issued by the *Employer* at or before the Contract Date and which apply to this contract.

| Drawing number | Revision | Title |
|---|---|---|

| | | |
|---|---|---|
| Not Applicable | | |
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## 9. SPECIFICATIONS

| Title | Date or revision | Tick if publicly available |
|---|---|---|
| **General Specifications:** | | |
| **240-105658000 – Supplier Contract Quality Requirements Specification** | | |
| **ISO 9001:2008 – Quality Management Systems** | | |
| **OHASA (1993) – Occupational Health and Safety Act of South Africa, Act 85 of 1993** | | √ |
| **32-136 – Contractor Health and Safety Requirements** | | |
| **240-150642762 – Generation Plant Safety Regulations** | | |
| **240-62196227 – Eskom Life-saving Rules Directive 23-421** | | |
| | | |
| **Technical specifications:** | | |
| **SANS 10139 – Fire Detection and Alarm Systems for Buildings – System Design, Installation and Servicing** | | √ |
| **SANS 10400-T – The Application of the National Building Regulations Part T – Fire Protection** | | √ |

| | | |
|---|---|---|
| **240-56737448 – Fire Detection & Life Safety Design Standard** | | |
| **240-54937654 – Inspection, Testing and Maintenance of Fire Detection Systems** | | |

## 12. DEVELOPMENT TEAM

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

Not applicable.

## 13. ACKNOWLEDGEMENTS

Not applicable.

## 14. ATTACHMENTS

## 14.1 ANNEXURE 1 – EQUIPMENT INSPECTION SHEET

# Equipment Inspection Sheet

| | | |
|---|---|---|
| **Company Name:** | **:** | |
| **Equipment Inspected:** | **:** | |
| **Serial Number:** | **:** | |
| **Reference Number** | **:** | |
| **KKS Number** | **:** | |

| Date Inspected | Item Description | Comment |
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## 14.2 ANNEXURE 2 – INITIAL PANEL STATUS INDICATION SHEET (RECORDING OF STANDING FAULTS)

# Initial Panel Status Indication Sheet (Recording of Standing Faults)

| | | |
|---|---|---|
| **Company Name:** | **:** | |
| **Panel Inspected:** | **:** | |
| **Serial Number:** | **:** | |
| **Reference Number** | **:** | |
| **KKS Number** | **:** | |

| Date Inspected | Faulty Device(s) Reference Number | Zone Reference Number | Device/Area Description | Fault Description |
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## 14.3 ANNEXURE 3 – INITIAL PANEL STATUS INDICATION SHEET (RECORDING OF ALARMS)

# Initial Panel Status Indication Sheet (Recording of Alarms)

| | | |
|---|---|---|
| **Company Name:** | **:** | |
| **Panel Inspected:** | **:** | |
| **Serial Number:** | **:** | |
| **Reference Number** | **:** | |
| **KKS Number** | **:** | |

| Date Inspected | Alarm Device(s) Reference Number | Zone Reference Number | Device/Area Description | Alarm Description |
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## 14.4 ANNEXURE 4 – INITIAL PANEL STATUS INDICATION SHEET (RECORDING OF DISABLED DEVICES)

# Initial Panel Status Indication Sheet (Recording of Disabled Devices)

| | | |
|---|---|---|
| **Company Name:** | **:** | |
| **Panel Inspected:** | **:** | |
| **Serial Number:** | **:** | |
| **Reference Number** | **:** | |
| **KKS Number** | **:** | |

| Date Inspected | Disabled Device(s) Reference Number | Zone Reference Number | Device/Area Description |
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## 14.5 ANNEXURE 5 – VFSD SYSTEM INITIAL STATUS INDICATION SHEET (RECORDING OF FAULTY DEVICES)

# VFSD System Initial Status Indication Sheet (Recording of Faulty Devices)

| | | |
|---|---|---|
| **Company Name:** | **:** | |
| **Panel Inspected:** | **:** | |
| **Serial Number:** | **:** | |
| **Reference Number** | **:** | |
| **KKS Number** | **:** | |

| Date Inspected | Faulty Device(s) Reference Number | Zone Reference Number | Device/Area Description | Fault Description |
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## 14.6 ANNEXURE 6 – PANEL STATUS INDICATION SHEET AFTER SERVICING (RECORDING OF STANDING FAULTS)

# Panel Status Indication Sheet after Servicing
# (Recording of Standing Faults)

| | | |
|---|---|---|
| **Company Name:** | **:** | |
| **Panel Inspected:** | **:** | |
| **Serial Number:** | **:** | |
| **Reference Number** | **:** | |
| **KKS Number** | **:** | |

| Date Inspected | Faulty Device(s) Reference Number | Zone Reference Number | Device/Area Description | Fault Description | Root Cause | Corrective Action |
|---|---|---|---|---|---|---|
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## 14.7 ANNEXURE 7 – PANEL STATUS INDICATION SHEET AFTER SERVICING (RECORDING OF ALARMS)

# Panel Status Indication Sheet after Servicing
# (Recording of Alarms)

| | | |
|---|---|---|
| **Company Name:** | **:** | |
| **Panel Inspected:** | **:** | |
| **Serial Number:** | **:** | |
| **Reference Number** | **:** | |
| **KKS Number** | **:** | |

| Date Inspected | Alarm Device(s) Reference Number | Zone Reference Number | Device/Area Description | Alarm Description | Root Cause | Corrective Action |
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## 14.8 ANNEXURE 8 – PANEL STATUS INDICATION SHEET AFTER SERVICING (RECORDING OF DISABLED DEVICES)

# Panel Status Indication Sheet after Servicing
# (Recording of Disabled Devices)

| | | |
|---|---|---|
| **Company Name:** | **:** | |
| **Panel Inspected:** | **:** | |
| **Serial Number:** | **:** | |
| **Reference Number** | **:** | |
| **KKS Number** | **:** | |

| Date Inspected | Disabled Device(s) Reference Number | Zone Reference Number | Device/Area Description | Fault Description | Root Cause | Corrective Action |
|---|---|---|---|---|---|---|
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## 14.9 ANNEXURE 9 – VFSD SYSTEM STATUS INDICATION SHEET AFTER SERVICING (RECORDING OF FAULTY DEVICES)

# VFSD System Status Indication Sheet after Servicing (Recording of Faulty Devices)

| | | |
|---|---|---|
| **Company Name:** | **:** | |
| **Panel Inspected:** | **:** | |
| **Serial Number:** | **:** | |
| **Reference Number** | **:** | |
| **KKS Number** | **:** | |

| Date Inspected | Faulty Device(s) Reference Number | Zone Reference Number | Device/Area Description | Fault Description |
|---|---|---|---|---|
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## 14.10 ANNEXURE 10 – MONTHLY INSPECTION, SERVICE & FAULT-FINDING SHEET FOR FIRE ALARM SYSTEMS

### Inspection, Servicing & Testing Sheet

Company Name : _____

Competent Person : _____

SAQCC Reg. No. : _____

Qualification : _____

Level : _____

**Drakensberg Power Station- Fire Detection Systems Inspection, Servicing & Fault-finding**

**Fire Alarm Systems**

**Monthly Inspection, Service & Fault-finding**

| Item | Task Description | Completed | Notes |
|---|---|---|---|
| 1 | Obtain the status condition of all the panels, record the status condition of all panels, record faulty device reference numbers, disabled devices, zones and the specific fault detail that are evident on the panels. Record on relevant indication sheets and also download a print out from the panel of the faulty devices. | | |
| 2 | Perform fault-finding on the panels that have standing faults and alarms to determine the cause of the faults and the alarms | | |
| 3 | Proceed by clearing any standing faults and alarms. | | |
| 4 | The outcome of the monthly inspection, fault-finding, servicing & repair and clearance of any standing faults and alarms are captured in a detailed report that are submitted to the *Service* | | |

| | | | |
|---|---|---|---|
| | *Manager*. This report at a minimum contains the findings of the inspection, referenced the faulty devices with the specific device number, causes of the faults, action taken to clear the faults, servicing and any recommendations that may transpire from the service. Record on relevant indication sheets of the faulty and disabled devices. | | |

| | |
|---|---|
| Deficiencies corrected during the Monthly Inspection & Servicing. | |
| Deficiencies remaining after the Monthly Inspection & Servicing. | |
| Specify any corrective action/follow-up. | |
| Cross-referenced documentation.<br>(Reports, procedures, etc.) | |

Close-out:

| | Work Completed by: | Approved by: |
|---|---|---|
| Name | | |
| : | _____ | _____ |
| Date | | |
| : | _____ | _____ |
| Signature | | |
| : | _____ | _____ |

## 14.11 ANNEXURE 11 – 3-MONTHLY INSPECTION & SERVICE SHEET FOR FIRE ALARM SYSTEMS

### Inspection, Servicing & Testing Sheet

Company Name : _____

Competent Person : _____

SAQCC Reg. No. : _____

Qualification : _____

Level : _____

**Drakensberg Power Station- Fire Detection Systems Inspection & Servicing**

**Fire Alarm Systems**

**3-Monthly Inspection & Service**

| Item | Task Description | Completed | Notes |
|---|---|---|---|
| 1 | Obtain the status condition of all the panels, record the status condition of all panels, record faulty device reference numbers, disabled devices, zones and the specific fault detail that are evident on the panels. Record on relevant indication sheets and download a printout from the panel of the faulty devices. | | |
| 2 | Prepare for testing by reading through the logbook that is kept on the main panel in the control room. Any corrective action that has not yet been taken should be noted and carried out during this service. | | |
| 3 | Obtain a printout from the panel of all the faulty devices. Exchange faulty devices with replacement units, set to the same address. Where required, dirty sensors must be cleaned for re-use. | | |

| | | | |
|---|---|---|---|
| 4 | Obtain a printout of device analogue values. Compare these values to the permitted values for each point. Replace faulty devices or repair wiring. | | |
| 5 | Print out a complete system configuration from the panel software. Compare this to the system specification and verify that the system zoning, input-output mapping, and other settings have not changed. | | |
| 6 | Check the panel for any disabled devices and investigate the reason. Any faults must be rectified and any disabled devices must be enabled. | | |
| 7 | Alarm Test:<br>• Test one sensor or call point in each zone. Activate each point in turn, checking that the sounders operate and that the panel reacts correctly. Note: Precautionary measures must be taken to prevent discharge of foam/water spray systems during alarm testing of the transformer panels as the systems will activate upon alarm testing of the panels.<br>• For remote panels, verify that the alarm is also generated on the main panel in the equipment room and that the description is displayed on the SCADA. | | |
| 8 | Fault Test:<br>• Remove one sensor in the system and check that the panel correctly reports the event.<br>• For remote panels, verify that the fault indication is also generated on the main panel in the equipment room and | | |

| | | | |
|---|---|---|---|
| | that the description is displayed on the SCADA.<br>• Accept the fault, replace the sensor and reset the panel. | | |
| 9 | Visually inspect control panels and components for any signs of moisture ingress, damage, deterioration or any abnormalities. | | |
| 10 | Check that all printed circuit boards are in a good condition, free of dust and securely mounted on the panel. | | |
| 11 | Examine batteries and their connections. Test batteries and determine if replacement is required or if batteries are still in good condition. Check if the battery replacement date will be passed before the next service and if so, replace the battery. The age of the battery should be marked on it with a label. Sealed lead acid batteries should be replaced at least every 2 years. | | |
| 12 | Record on relevant indication sheets the faulty and disabled devices. | | |
| 13 | Restore the system to normal condition on completion of the service. | | |

| | |
|---|---|
| Deficiencies corrected during the Quarterly Inspection & Servicing. | |
| | |
| Deficiencies remaining after the Quarterly Inspection & Servicing. | |
| | |

| | |
|---|---|
| Specify any corrective action/follow-up. | |
| | |
| Cross-referenced documentation.<br>(Reports, procedures, etc.) | |
| | |
| Close-out: | |

| | Work Completed by: | Approved by: |
|---|---|---|
| Name | : | |
| Date | : | |
| Signature | : | |

## 14.12 ANNEXURE 12 – YEARLY SERVICE SHEET FOR FIRE ALARM SYSTEMS

### Inspection, Servicing & Testing Sheet

Company Name : _____

Competent Person : _____

SAQCC Reg. No. : _____

Qualification : _____

Level : _____

**Drakensberg Power Station- Fire Detection Systems Servicing**

**Fire Alarm Systems**

**Yearly Service**

| Item | Task Description | Completed | Notes |
|---|---|---|---|
| 1 | Obtain the status condition of all the panels, record the status condition of all panels, record faulty device reference numbers, disabled devices, zones and the specific fault detail that are evident on the panels. Record on relevant indication sheets and download a printout from the panel of the faulty devices. | | |
| 2 | Prepare for testing by reading through the logbook that is kept on the main panel in the control room. Any corrective action that has not yet been taken should be noted and carried out during this service. | | |
| 3 | Obtain a printout from the panel of all the faulty devices. Exchange faulty devices with replacement units, set to the same address. Where required, dirty sensors must be cleaned for re-use. | | |
| 4 | Obtain a printout of device analogue values. Compare these | | |

| | | | |
|---|---|---|---|
| | values to the permitted values for each point. Replace faulty devices or repair wiring. | | |
| 5 | Print out a complete system configuration from the panel software. Compare this to the system specification and verify that the system zoning, input-output mapping, and other settings have not changed. | | |
| 6 | Check the panel for any disabled devices and investigate the reason. Any faults must be rectified and any disabled devices must be enabled. | | |
| 7 | Alarm Test:<br>• Test one sensor or call point in each zone. Activate each point in turn, checking that the sounders operate and that the panel reacts correctly. Note: Precautionary measures must be taken to prevent discharge of foam/water spray systems during alarm testing of the transformer panels as the systems will activate upon alarm testing of the panels.<br>• For remote panels, verify that the alarm is also generated on the main panel in the equipment room and that the description is displayed on the SCADA. | | |
| 8 | Fault Test:<br>• Remove one sensor in the system and check that the panel correctly reports the event.<br>• For remote panels, verify that the fault indication is also generated on the main panel in the equipment room and that the description is displayed on the SCADA. | | |

| | | | |
|---|---|---|---|
| | • Accept the fault, replace the sensor and reset the panel. | | |
| 9 | Visually inspect control panels and components for any signs of moisture ingress, damage, deterioration or any abnormalities. | | |
| 10 | Check that all printed circuit boards are in a good condition, free of dust and securely mounted on the panel. | | |
| 11 | Examine batteries and their connections. Test batteries and determine if replacement is required or if batteries are still in good condition. Check if the battery replacement date will be passed before the next service and if so, replace the battery. The age of the battery should be marked on it with a label. Sealed lead acid batteries should be replaced at least every 2 years. | | |
| 12 | Input-output configuration test:<br>• Verify by testing that the input-output mapping operates as programmed. Activate an input, such as a sensor, callpoint, or interface unit and verify that the correct outputs operate. Also check that the outputs function correctly. | | |
| 13 | Inspect that no building changes have taken place that may affect the operation of the fire alarm system. | | |
| 14 | Record on relevant indication sheets the faulty and disabled devices. | | |
| 15 | Restore the system to normal condition on completion of the service. | | |
| | | | |
| Deficiencies corrected during the Annual Servicing. | | | |

| | |
|---|---|
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| | |
| Deficiencies remaining after the Annual Servicing. | |
| | |
| Specify any corrective action/follow-up. | |
| | |
| Cross-referenced documentation.<br>(Reports, procedures, etc.) | |
| | |
| Close-out: | |

| | Work Completed by: | Approved by: |
|---|---|---|
| Name | : | |
| Date | : | |
| Signature | : | |

## 14.13 ANNEXURE 13 – YEARLY FUNTIONAL TESTING SHEET FOR FIRE ALARM SYSTEMS

### Inspection, Servicing & Testing Sheet

Company Name : _____

Competent Person : _____

SAQCC Reg. No. : _____

Qualification : _____

Level : _____

**Drakensberg Power Station- Fire Detection Systems Functional Testing**

**Fire Detectors**

**Yearly Functional Testing**

| Item | Task Description | Completed | Notes |
|---|---|---|---|
| 1 | Annual functional testing of all fire detectors and callpoints covering the power station, headrace, surface building stores area, visitors centre and transformer areas shall be carried out. | | |
| 2 | Note, Annual functional testing of detectors and callpoints for the transformers shall be carried out differently to the stations fire alarm system detection devices due to the fact that the transformer fire detection devices are interfaced to the operation of the water-foam protection systems on the transformers. Testing of fire detectors and callpoints on the transformers shall coincide with outages on the equipment or the respective systems shall be isolated to ensure that testing will not cause spurious operation of the fire protection systems. Liaise upfront with the *Service Manager* on | | |

| | | | |
|---|---|---|---|
| | suitable dates for the tests and access requirements. | | |
| 3 | All fire detectors and call points shall all be covered over the year period and provision must be made for the necessary resources to conduct the testing. | | |
| 4 | Note that functional testing of detectors that are interfaced to solenoid operated dampers for some plant areas means that the functional operation of those dampers are verified at the same time that the detectors are tested. | | |

| | |
|---|---|
| Deficiencies corrected during the Annual Functional Testing. | |
| Deficiencies remaining after the Annual Functional Testing. | |
| Specify any corrective action/follow-up. | |
| Cross-referenced documentation.<br>(Reports, procedures, etc.) | |

Close-out:

| | Work Completed by: | Approved by: |
|---|---|---|
| Name | : | |
| Date | : | |
| Signature | : | |

# 15. APPENDIX A: PRICING DATA

### C1 PRICING ASSUMPTIONS

Entries in the four columns Unit, Quantity, Rate and Price are made by the tendering *Contractor.*

All Prices are to be shown excluding VAT unless instructed otherwise by the *Employer* in Tender Data or in an instruction the *Employer* has given before the tenderer enters his Prices.

If there is insufficient space in the Price List which follows, state in which document the Price List is contained.

### C2 PRICE LIST

The Price List is as follows / contained in _____ (delete the text which does not apply and this note)

| Item nr | Description | Unit | Expected Quantity | Rate | Price |
|---|---|---|---|---|---|
| 1 | Bill no 1 – General Preliminary<br><br>ALL work to be done by the Appointed *Contractor* including Safety Compliance Services and emergency response<br><br>Eskom is an ISO 9001, 18001 registered company and requires from the *Contractor* to adhere to these | | | | |
| 1.1 | To provide Eskom with a Safety File as required and to maintain the fire protection systems throughout the contract period as contemplated | Sum | 1 | | |
| 1.2 | Provide contract employees with appropriate Personal Protective Equipment including (as a minimum) for the following work categories: | | | | |
| 1.2.1 | Inspection, Servicing and Testing as per the specification. | Sum | 1 | | |
| 1.4 | The *Contractor* shall compile a file, in duplicate and in electronic format (as described) which shall be kept up to-date throughout the contract period and one physical and one electronic copy returned when the contract period has expired. | Sum | 1 | | |
| **Total Bill 1** | | | | | |

| **Bill 2: <u>Monthly</u> Inspect, conduct fault-finding and Restore Faults and Alarms on Station Fire Alarm Systems:** | | | | | | |
|---|---|---|---|---|---|---|
| **Item nr** | **Description** | **Unit** | **Expected Quantity** | **Rate** | **Price for Year 1** | **Total for 60 months** |
| 2 | Monthly Inspection, Fault-finding & Repairing of Faults and Alarm intervals<br>For the inspection, fault-finding & Restoring of Faults & Alarms of the Station Fire Alarm System (as per scope) inclusive of all supervision, labour, materials, and traveling costs of: | | | | | |
| **2.1** | **Station Fire Alarm Systems:** | | | | | |
| 2.1.1 | Equipment Room Aritech Fire Alarm Panel | Ea | 1 | | | |
| 2.1.2 | Equipment Room Aritech Repeater Panel | Ea | 1 | | | |
| 2.1.3 | Visitors Center Fire Alarm Panel | Ea | 1 | | | |
| 2.1.4 | Outside Store Fire Alarm Panel | Ea | 1 | | | |
| 2.1.5 | Headrace Fire Alarm Panel | Ea | 1 | | | |
| 2.1.6 | Surface Building Fire Alarm Panel | Ea | 1 | | | |
| **2.2** | **Transformer Fire Alarm Systems:** | | | | | |
| 2.2.1 | Generator Transformer 1 Fire Alarm Panel | Ea | 1 | | | |
| 2.2.2 | Generator Transformer 2 Fire Alarm Panel | Ea | 1 | | | |
| 2.2.3 | Generator Transformer 3 Fire Alarm Panel | Ea | 1 | | | |
| 2.2.4 | Generator Transformer 4 Fire Alarm Panel | Ea | 1 | | | |
| 2.2.5 | Station Transformer 1 Fire Alarm Panel | Ea | 1 | | | |
| 2.2.6 | Station Transformer 2 Fire Alarm Panel | Ea | 1 | | | |
| 2.2.7 | Service Transformer 1 Fire Alarm Panel | Ea | 1 | | | |
| 2.2.8 | Service Transformer 2 Fire Alarm Panel | Ea | 1 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **2.3** | **Video Fire Alarm & Smoke Detection (VFSD) System:** | | | | | |
| 2.3.1 | Control Room Client PC Alarm Monitor | Ea | 1 | | | |
| 2.3.2 | Security Room Client PC Alarm Monitor | Ea | 1 | | | |
| 2.3.3 | Equipment Rack | Ea | 1 | | | |
| 2.3.4 | HUB Enclosures | Ea | 5 | | | |
| 2.3.5 | Camera Enclosures | Ea | 5 | | | |
| 2.3.6 | Cameras | Ea | 5 | | | |
| 2.3.7 | Lights | Ea | 5 | | | |
| **2.4** | **Aspiration Units:** | | | | | |
| 2.4.1 | Unit 1 Generator Aspiration Unit | Ea | 1 | | | |
| 2.4.2 | Unit 2 Generator Aspiration Unit | Ea | 1 | | | |
| 2.4.3 | Unit 3 Generator Aspiration Unit | Ea | 1 | | | |
| 2.4.4 | Unit 4 Generator Aspiration Unit | Ea | 1 | | | |
| 2.4.5 | Lift Shaft Aspiration Unit | Ea | 1 | | | |
| **2.5** | **Beam Units:** | | | | | |
| 2.5.1 | Unit 1 Spherical Valve Beam Unit | Ea | 1 | | | |
| 2.5.2 | Unit 2 Spherical Valve Beam Unit | Ea | 1 | | | |
| 2.5.3 | Unit 3 Spherical Valve Beam Unit | Ea | 1 | | | |
| 2.5.4 | Unit 4 Spherical Valve Beam Unit | Ea | 1 | | | |
| **Total Bill 2** | | | | | | |

| **Bill 3: <u>3-Monthly</u> inspect and service fire alarm systems:** | | | | | | |
|---|---|---|---|---|---|---|
| **Item nr** | **Description** | **Unit** | **Expected Quantity** | **Rate** | **Price for Year 1** | **Total for 60 months** |

| | | | | | | |
|---|---|---|---|---|---|---|
| 3 | 3-Monthly Inspection & Servicing intervals<br>For the inspection & service of fire alarm system (as per scope) inclusive of all supervision, labour, materials, and traveling costs of: | | | | | |
| **3.1** | **Station Fire Alarm Systems:** | | | | | |
| 3.1.1 | Equipment Room Aritech Fire Alarm Panel | Ea | 1 | | | |
| 3.1.2 | Equipment Room Aritech Repeater Panel | Ea | 1 | | | |
| 3.1.3 | Visitors Center Fire Alarm Panel | Ea | 1 | | | |
| 3.1.4 | Outside Store Fire Alarm Panel | Ea | 1 | | | |
| 3.1.5 | Headrace Fire Alarm Panel | Ea | 1 | | | |
| 3.1.6 | Surface Building Fire Alarm Panel | Ea | 1 | | | |
| **3.2** | **Transformer Fire Alarm Systems:** | | | | | |
| 3.2.1 | Generator Transformer 1 Fire Alarm Panel | Ea | 1 | | | |
| 3.2.2 | Generator Transformer 2 Fire Alarm Panel | Ea | 1 | | | |
| 3.2.3 | Generator Transformer 3 Fire Alarm Panel | Ea | 1 | | | |
| 3.2.4 | Generator Transformer 4 Fire Alarm Panel | Ea | 1 | | | |
| 3.2.5 | Station Transformer 1 Fire Alarm Panel | Ea | 1 | | | |
| 3.2.6 | Station Transformer 2 Fire Alarm Panel | Ea | 1 | | | |
| 3.2.7 | Service Transformer 1 Fire Alarm Panel | Ea | 1 | | | |
| 3.2.8 | Service Transformer 2 Fire Alarm Panel | Ea | 1 | | | |
| **3.3** | **Video Fire Alarm & Smoke Detection (VFSD) System:** | | | | | |
| 3.3.1 | Control Room Client PC Alarm Monitor | Ea | 1 | | | |
| 3.3.2 | Security Room Client PC Alarm Monitor | Ea | 1 | | | |
| 3.3.3 | Equipment Rack | Ea | 1 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 3.3.4 | HUB Enclosures | Ea | 17 | | | |
| 3.3.5 | Camera enclosures | Ea | 54 | | | |
| 3.3.6 | Cameras | Ea | 54 | | | |
| 3.3.7 | Lights | Ea | 54 | | | |
| **3.4** | **Aspiration Units:** | | | | | |
| 3.4.1 | Unit 1 Generator Aspiration Unit | Ea | 1 | | | |
| 3.4.2 | Unit 2 Generator Aspiration Unit | Ea | 1 | | | |
| 3.4.3 | Unit 3 Generator Aspiration Unit | Ea | 1 | | | |
| 3.4.4 | Unit 4 Generator Aspiration Unit | Ea | 1 | | | |
| 3.4.5 | Lift Shaft Aspiration Unit | Ea | 1 | | | |
| **3.5** | **Beam Units:** | | | | | |
| 3.5.1 | Unit 1 Spherical Valve Beam Unit | Ea | 1 | | | |
| 3.5.2 | Unit 2 Spherical Valve Beam Unit | Ea | 1 | | | |
| 3.5.3 | Unit 3 Spherical Valve Beam Unit | Ea | 1 | | | |
| 3.5.4 | Unit 4 Spherical Valve Beam Unit | Ea | 1 | | | |
| **Total Bill 3** | | | | | | |

| **Bill 4: <u>Yearly</u> service of fire detection systems:** | | | | | | |
|---|---|---|---|---|---|---|
| **Item nr** | **Description** | **Unit** | **Expected Quantity** | **Rate** | **Price for Year 1** | **Total for 60 months** |
| 4 | Yearly Service intervals<br>For the servicing of fire detection systems inclusive of all supervision, labour, materials, and traveling costs of: | | | | | |
| **4.1** | **Fire Alarm Systems:** | | | | | |
| **4.1.1** | **Station Fire Alarm Systems:** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 4.1.1.1 | Equipment Room Aritech Fire Alarm Panel | Ea | 1 | | | |
| 4.1.1.2 | Equipment Room Aritech Repeater Panel | Ea | 1 | | | |
| 4.1.1.3 | Visitors Center Fire Alarm Panel | Ea | 1 | | | |
| 4.1.1.4 | Outside Store Fire Alarm Panel | Ea | 1 | | | |
| 4.1.1.5 | Headrace Fire Alarm Panel | Ea | 1 | | | |
| 4.1.1.6 | Surface Building Fire Alarm Panel | Ea | 1 | | | |
| **4.1.2** | **Transformer Fire Alarm Systems:** | | | | | |
| 4.1.2.1 | Generator Transformer 1 Fire Alarm Panel | Ea | 1 | | | |
| 4.1.2.2 | Generator Transformer 2 Fire Alarm Panel | Ea | 1 | | | |
| 4.1.2.3 | Generator Transformer 3 Fire Alarm Panel | Ea | 1 | | | |
| 4.1.2.4 | Generator Transformer 4 Fire Alarm Panel | Ea | 1 | | | |
| 4.1.2.5 | Station Transformer 1 Fire Alarm Panel | Ea | 1 | | | |
| 4.1.2.6 | Station Transformer 2 Fire Alarm Panel | Ea | 1 | | | |
| 4.1.2.7 | Service Transformer 1 Fire Alarm Panel | Ea | 1 | | | |
| 4.1.2.8 | Service Transformer 2 Fire Alarm Panel | Ea | 1 | | | |
| **4.1.3** | **Video Fire Alarm & Smoke Detection (VFSD) System:** | | | | | |
| 4.1.3.1 | Control Room Client PC Alarm Monitor | Ea | 1 | | | |
| 4.1.3.2 | Security Room Client PC Alarm Monitor | Ea | 1 | | | |
| 4.1.3.3 | Equipment Rack | Ea | 1 | | | |
| 4.1.3.4 | HUB Enclosures | Ea | 17 | | | |
| 4.1.3.5 | Camera enclosures | Ea | 54 | | | |
| 4.1.3.6 | Cameras | Ea | 54 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 4.1.3.7 | Lights | Ea | 54 | | | |
| **4.1.4** | **Aspiration Units:** | | | | | |
| 4.1.4.1 | Unit 1 Generator Aspiration Unit | Ea | 1 | | | |
| 4.1.4.2 | Unit 2 Generator Aspiration Unit | Ea | 1 | | | |
| 4.1.4.3 | Unit 3 Generator Aspiration Unit | Ea | 1 | | | |
| 4.1.4.4 | Unit 4 Generator Aspiration Unit | Ea | 1 | | | |
| 4.1.4.5 | Lift Shaft Aspiration Unit | Ea | 1 | | | |
| **4.1.5** | **Beam Units:** | | | | | |
| 4.1.5.1 | Unit 1 Spherical Valve Beam Unit | Ea | 1 | | | |
| 4.1.5.2 | Unit 2 Spherical Valve Beam Unit | Ea | 1 | | | |
| 4.1.5.3 | Unit 3 Spherical Valve Beam Unit | Ea | 1 | | | |
| 4.1.5.4 | Unit 4 Spherical Valve Beam Unit | Ea | 1 | | | |
| **Total Bill 4** | | | | | | |

| **Bill 5: <u>Yearly</u> functional test of fire detectors:** | | | | | | |
|---|---|---|---|---|---|---|
| **Item nr** | **Description** | **Unit** | **Expected Quantity** | **Rate** | **Price for Year 1** | **Total for 60 months** |
| 5 | Yearly Functional Test intervals<br>For the functional testing of fire detectors inclusive of all supervision, labour, and traveling costs of: | | | | | |
| 5.1 | Aritech Fire Detectors | Ea | 518 | | | |
| 5.2 | VFSD Detectors (Cameras) | Ea | 54 | | | |
| **Total Bill 5** | | | | | | |

| **Section 6: Reactive Maintenance** | | | | | |
|---|---|---|---|---|---|
| **Item nr** | **Description** | **Unit** | **Expected Quantity** | **Rate** | **Price** |
| 6. | Bill No 12 – Pricing for Reactive maintenance per severity level conformance<br><br>Severity levels are defined in the scope of works and must be priced for availability and responses times indicated. Response included, personnel with the correct level of expertise, reliable transport with major critical spares at hand | 24/7 | P/hour | | |
| 6.1 | <u>Critical Level:</u><br><br>When performance failures could result in a life or death situation and/or when performance failures can result in major damage to assets which will directly impact on the availability and performance of Essential Functions required for Power Generation. This level calls for immediate response (≤ 1 hour) | 2/h | 25 | | |
| 6.2 | <u>Level 1</u><br><br>During working hours while turbines are in Generating mode and/or standby support outside of working hours where activities must be performed by highly qualified personnel or being supervised by one and/or when on-site critical spares holding is required to avoid failure. This level calls for a response within 1 to 3 hours | /h | 25 | | |
| 6.3 | <u>Level 2</u><br><br>Normal planned repair functions actioned during normal working hours by adequately trained personnel for work which have some degree of built-in redundancy and reserve capacity built in as part of the design, which require maintenance and support only during working hours and which require limited on-site spares holding. This level is requires an approved order, must be planned and must be performed during the planned week. | /h | 50 | | |

| | | | | | |
|---|---|---|---|---|---|
| 6.4 | List of rates for additional resources **(Office Hours)** | | | | |
| 6.4.1 | Supervisor of works | /h | 5 | | |
| 6.4.2 | Artisan | /h | 5 | | |
| 6.4.3 | Skilled Worker | /h | 5 | | |
| 6.4.4 | Unskilled Worker | /h | 5 | | |
| **Total Bill 6** | | | | | |

| **Bill 7: Spares:** | | | | |
|---|---|---|---|---|
| **Item nr** | **Description** | **Unit** | **Expected Quantity** | **Total** |
| 7 | For the supply of the following spares: | each | | |
| 7.1 | UV Infrared Explosion Proof Flame Detector and Interface IR3 _C3BRS-CC-452-080-C3BRS-CC-452-085 | each | 6 | |
| 7.2 | Edwards FHSD8015-99 Laser Sense 10 Detector | each | 4 | |
| 7.3 | Aritech Panel FP1264C for TRFR and Main surface building | each | 4 | |
| 7.4 | Moxa Transio – TFC -142-S Serial to Fibre converter TCF-142-S-ST | each | 3 | |
| 7.5 | **Long:** Fire Resistant Cable, PH 30, 4 Core x 1.5mm Square, Operating Voltage: 300/500V, Maximum Operating Temperature: 125 Degree Celsius, Stranded Plain copper Class 5 Conductor, Standard Outer Sheath: Red. | m | 300 | |
| 7.6 | Ziton FDR50 – EZ Addressable loop powered reflective Beam Detector (50M) Brand: Ziton Part No.: 1108010 | each | 4 | |

| | | | | |
|---|---|---|---|---|
| | Categories: Detection | | | |
| 7.7 | Filter Cartridge, Type 9-30755-<br>P/LaserSense Nano/25/100 for<br>LaserSense Smoke Detector, Width<br>20mm x Height 44mm x Depth 77mm | each | 30 | |
| 7.8 | Aritech Panel FP12** Used as repeater | each | 1 | |
| 7.9 | 950 Series XP95 Optical Detector, DP951 | each | 100 | |
| 7.10 | Moxa – SFP – 1GLXLC V1.1 | each | 2 | |
| 7.11 | Aritech Conventional Panel for Head Race 1X-F4-xx | each | 3 | |
| 7.12 | Moxa EDS-510E-3GTXSFP V1.0.1 | each | 3 | |
| 7.13 | Power Supply for Aritech Panel FR1264N03,950 Protocol PS2000 | each | 9 | |
| 7.14 | Network Card for Aritech Panel FR1264N03,950 Protocol NC2011 | each | 3 | |
| 7.15 | 650 Series Optical Smoke Detector, DP652 | each | 20 | |
| 7.16 | SigniFire Video Analytic Camera, 2,8mm Lens complete | each | 5 | |
| 7.17 | Laser Sense 10 High Sensitivity Smoke Detector FHSD8015-99 English | each | 4 | |
| 7.18 | Aritech – 950 Mounting Base | each | 6 | |
| 7.19 | Field Server for Aritech Panel FR1264N03, 950 Protocol FS-B2010 | each | 1 | |
| 7.20 | Conventional Fire Panel Language Kit | each | 1 | |
| 7.21 | Apollo Discovery Multi-Sensor (Optical/Heat) DP991T | each | 10 | |
| 7.22 | Sounder (KLAXON) TCC-0001 | each | 6 | |
| 7.23 | Wall Sounder BF430C/CC/DR/65 | each | 6 | |
| 7.24 | Aritech – Conventional Panel (FRG2064C-99)- global repeater | each | 1 | |
| 7.25 | Aritech Host CPU BD (FC2012) | each | 4 | |
| 7.26 | Battery CDD28JRY | each | 6 | |
| 7.27 | Apollo – Area Sounder Visiual Indicator Red (EN54-3:2001) | each | 8 | |
| 7.28 | Discovery Manual Call Point with Isolator (EN4-11:2001) | each | 8 | |

| | | | | |
|---|---|---|---|---|
| 7.29 | PM86X series27.6 Vdc Switch Mode Power Supply | each | 4 | |
| 7.29 | 5VDS 24V 5A Boxed PSU | each | 4 | |
| 7.30 | Moxa - Gigabit Managed Ethernet Switch; Input: 20; Output: 100; Specification: 20 10/100/1000BASET(X) | each | 2 | |
| 7.31 | Synaps Tech Sycall-R6847L | each | 5 | |
| 7.32 | Laser sensor | each | 6 | |
| 7.33 | Aritech Discovery Optical Smoke Detector DP991 | each | 30 | |
| 7.34 | TYCO detector base (517.050.041) | each | 5 | |
| 7.35 | 601P Conventional Optical Smoke Detector | each | 5 | |
| 7.36 | Aritech – FEP PCB (FEP2000N) FP2000 | each | 4 | |
| 7.37 | Aritech – 16 Zone Extension Card (ZE2016) | each | 5 | |
| 7.38 | Aritech – SD2000 | each | 6 | |
| 7.39 | Aritech – Keypad (KP2000) FP/FR1200/2000 | each | 7 | |
| 7.40 | Aritech – Global RPTR (FRG 2064C-99) 16-642 | each | 1 | |
| 7.41 | Aritech – LCD display for FP1200, FP12xx (LCD1200) | each | 6 | |
| 7.42 | Apollo - Sounder Control Unit XP95, 0956 | each | 5 | |
| 7.43 | Aritech -Lead Acid Rechargeable Battery, BS131N | each | 20 | |
| 7.44 | Aritech - Lead Acid Rechargeable Battery, BS127N | each | 20 | |
| 7.45 | Aritech - Heat Detector, DT992 | each | 5 | |
| 7.46 | Aritech - 2Loop Ext Card (LC1502), 1200/200 | each | 15 | |
| 7.47 | Aritech - PSU PCB (PS1200N), FP1200C/FP2000C | each | 7 | |
| 7.48 | Aritech - Host CPU BD (FC2012) 1200/2000 SRS | each | 7 | |
| 7.49 | Delivery of spares to Drakensberg | each | 1 | |
| **Total Bill 7** | | | | |

**SUMMARY**

| Item Nr | Description | Price |
|---|---|---|
| 1 | Bill No 1 - Preliminary | |
| 2 | Bill No 2 – Monthly inspection, fault-finding & Restoring of Faults & Alarms of the Station Fire Alarm Systems | |
| 3 | Bill No 3 – 3-Monthly inspection and servicing of fire alarm systems | |
| 4 | Bill No 4 – Annual servicing of fire detection systems | |
| 5 | Bill No 5 – Annual functional test of fire detectors | |
| 6 | Bill No 6 – Reactive Maintenance | |
| 7 | Bill No 7 – Spares | |
| | **The total of the Prices** | |