

	<b>Scope Of Work</b>	<b>Bulk Material Services</b>
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**Overland, OTS, Staithes, Conveyor  
Belt systems at Duvha Power  
Station on an “as and when required  
basis”**

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## Content

### Page

1. Introduction.....	3
1.1 Purpose.....	3
1.1.1 Applicability .....	3
2. Normative/Informative References.....	3
2.1 Normative.....	3
2.2 Informative .....	3
2.3 Definitions .....	4
2.4 Abbreviations .....	5
3. Supporting Clauses .....	6
3.1 Scope (Fixed plant Operations) .....	6
3.1.1 Sites generic scope .....	6
3.1.2 to 3.1.4 Coal Plant Operations and Cleaning .....	7
4. COAL .....	<b>Error! Bookmark not defined.</b>
7. Health, Safety, Environment and Quality assurance .....	28
9.3 Documentation control.....	31
9.4 Invoicing and payment.....	31
9.4 Contract change management .....	31
9.5 Records of defined cost to be kept by the <i>Contractor</i> .....	32
9.6 Training workshops .....	32
10. List of drawings.....	32
11. Acceptance.....	32
10. Revisions .....	33
12. Development Team .....	<b>Error! Bookmark not defined.</b>
13. Acknowledgements .....	33

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## **1. Introduction**

This document details all the work that needs to be done with regards to the maintenance of the Overland conveyors, Sampling Plant, reclaim conveyors (OTS) and top Staithes Conveyor systems at Duvha Power Station. The scope of work is defined in this document

### **Purpose**

The purpose is to preserve the status of plant cleanliness and ensure availability and reliability through operating of the assets and maintaining good housekeeping standards.

#### **1.1.1 Applicability**

This document applies to the contractor who will be doing the actual work of maintaining Overland conveyors, Sampling Plant, reclaim conveyors (OTS) Conveyor systems at Duvha Power Station

## **2. Normative/Informative References**

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs and additional site-specific ones.

### **2.1 Normative**

1. ISO 9001 Quality Management Systems
2. OSHAS 1800 Safety Management Systems
3. Occupational Health and Safety Act and Regulations (85 of 1993)
4. 36-681\_Generation Plant Safety Regulation
5. 240-62196227\_Eskom Life Saving Rules
6. 32-95\_Environmental, Occupational Health and safety Incident Management Procedure

### **2.2 Informative**

1. Criminal Procedures Act 51 of 1977
2. National Road Traffic Act 93 of 1996
3. Labour Relations Act 66 of 1995
4. Basic Conditions of Employment Act 75 of 1997
5. National Key Point Act 102 of 1980

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## 2.3 Definitions

Description	Definition
<b>Appointed Contractor</b>	Means a contractor appointed by the principal contractor.
<b>Appointed Person</b>	A person who has been authorised in terms of 36-681_Generation Plant Safety Regulation to: <b>(i)</b> Determining appropriate and effective isolations for the anticipated work to be carried out safely. <b>(ii)</b> Ensuring that the isolation and de-isolation on the plant covered by a permit to work is effectively carried out taking health and safety precautions into account. <b>(iii)</b> Issuing of prepared permits once all the associated test certificates are available and the required risk assessments have been presented to the appointed person by the responsible person for review in terms of these regulations.
<b>Baseline Risk Assessment</b>	(32-520) Baseline operational risks refer to the health and safety risks associated with all standard processes and routine activities in the business
<b>Cleaning Activity</b>	Means the safe cleaning the outside of the plant by the disabling of mechanisms to inhibit starting of the plant during the cleaning process, which is done in accordance with formulated safe procedures.
<b>Contractor</b> (includes appointed contractor)	Means an employer as defined in section 1 of the Act who performs contract work and includes principal contractors
<b>Competent Person</b>	(OHS Act) means any person having knowledge, training, experience, and qualifications, specific to work or task being performed, provided that, where appropriate, qualifications and training are registered in terms of the South African Qualifications Authority Act, 1995 (Act No. 58 of 1995).
<b>Danger/Dangerous</b>	Means a condition/substance that constitutes a risk of personal injury, impairment of health, or death
<b>Employee</b>	(OHS Act) means, subject to the provisions of subsection (2), any person who is employed by or works for an employer and who receives remuneration or who works under the direction or supervision of an employer or any other person.
<b>Employer</b>	(OHS Act) means, subject to the provisions of subsection (2), any person who employs or provides work for any person and remunerates that person or expressly or tacitly undertakes to remunerate him/her but excludes TES (ex. labour broker) as defined in section 1(1) of the Labour Relations Act.
<b>Field / Plant Operator</b>	Employee designated to conduct routine Plant inspections, Preventative Maintenance (PM) and (report) defect any breakdowns or abnormal Plant conditions
<b>Lifesaving Rules</b>	(240-62196227) a rule that, if not adhered to, has the potential to cause serious harm to people.
<b>Permit To Work</b>	Means the printed form containing sections entitled application, permits to work, suspension, suspension revocation, clearance, revocation, and it is used for the authorisation of all work to be carried out on the plant in terms of these regulations.

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<b>Plant</b>	Means structure, machinery, low voltage electrical equipment or equipment which does not fall within the scope of the Operating Regulations for High-voltage Systems, and excludes, mobile, portable lifting equipment, domestic circuits, appliances and tools.
<b>Responsible Person</b>	Means a person who has been authorised in terms of these regulations to be responsible for ensuring that the work on the plant covered by a permit to work can be carried out and executed taking health and safety precautions into account and within the terms of 36-681_Generation Plant Safety Regulation
<b>Safe/Safely/Safety</b>	Means a condition not posing any danger, an activity that can be carried out without danger, or protection against danger.
<b>Shall and Should</b>	The word “shall” is to be understood as mandatory and “should” as recommended.
<b>Skilled Person</b>	Means a person who has been trained, has adequate knowledge for the task at hand and declared competent in writing.
<b>Supervision/Supervise</b>	Means to oversee the actions of a person(s) to such an extent as to prevent any dangerous act, as far as reasonably practicable. Such a supervisor must be trained in risk assessment techniques and be able to understand the dangers / hazards associated with the task and who has the authority to ensure that precautionary measures taken are implemented.
<b>Visitor</b>	Any person visiting a workplace with the knowledge of, or under the supervision of, an employer.

## 2.4 Abbreviations

<b>Abbreviation</b>	<b>Explanation</b>
RA	Risk Assessment
AP	Appointed Person
CSY	Coal Stock Yard
LAR	Limited Access Register
ERI	Eskom Rotek Industries
OHSACT	Occupational Health And Safety Act
OEM	Original Equipment Manufacturer
RP	Responsible Person
PPE	Personal Protective Equipment
PTW	Permit To Work
H&S Rep	Health and Safety Representative

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Abbreviation	Explanation
RA	Risk Assessment
AP	Appointed Person
RA	Risk Assessment

### **3. Supporting Clauses**

#### **3.1 Scope**

The scope of work is the provision of Maintenance Services of the Overland, OTS and Staithes Conveyor Belt systems at Duvha Power Station Eskom Rotek Industries (ERI) Bulk Material Services (BMS) **for the duration of 36 months on an “as and when required basis”**.

##### **3.1.1 Sites generic scope**

The *works* is all maintenance including mechanical, electrical, and civil(steel structural work), plant condition monitoring, supervision, Equipment, Plant and Materials and labour required for the day-to-day maintenance of the:

- Overland coal conveyor system (includes the sampling plant) connecting the South plant of Seriti mine and the staithes 1 and 2 of Duvha Power Station. This includes all auxiliaries of these systems.
- On Terrace System (OTS) conveyor system connecting the reclaim system and the staithes of Duvha Power Station.

The scope includes removal of damaged/old parts or components and replace with new of similar specifications, model and type. All damaged/old parts must be disposed accordingly as per Duvha P/S waste management procedure.

The overland conveyor system consists of transfer houses, lifting equipment, substations, 16 conveyor belts of varying lengths, approximately 18 km long in total, i.e.

- Sampling plant
- Conveyors 2A & 2B;
- Conveyors 3A & 3B;
- Conveyors 4A & 4B;
- Conveyors 5A & 5B;
- Conveyors 6A & 6B;
- Conveyors 7A & 7B;
- Conveyors 8A & 8B;
- Link Conveyor 8 A & B to 6 A & B
- Emergency off-loading conveyor

#### **CONTROLLED DISCLOSURE**

The OTS system consists of transfer houses, substation, lifting equipment, 5 buffalo feeders, magnet belt and 4 conveyor belts of varying lengths, approximately 2 km long in total, i.e

- Reclaim conveyor
- Ramp conveyor
- Cross conveyor
- Link conveyor

## **4. Coal Plant Maintenance**

### **4.1 General maintenance**

The Contractor provides the complete maintenance of the system in such a manner to provide coal to Duvha Power Station at a continuous rate and in conjunction with the tonnage scheduled for each month, so as not to constrain any operation of the Employer.

The Contractor provides the Maintenance of both the overland and OTS systems. The remote control of overland conveyor system is done by the Contractor using a SCADA system from the Outside Plant Control. The OTS system is under the Contractor's control.

### **4.2 Maintenance methodology**

#### **4.2.1. Overland Conveyor System**

The two lines, A & B, are always available for operation, except on maintenance days when both lines will be standing as scheduled with Seriti mine for the Contractor to do maintenance. Twice a month, the opportunity exists for both lines to be non- operational simultaneously for 12 hours due to Seriti mine requirements.

#### **4.2.2 OTS System**

The Duvha Power Station Operating Contractor in liaison with the Supervisor, Seriti mine and the Duvha Power Station Maintenance Contractor plans the maintenance for the OTS system only when both belts from Seriti Mine are available for production.

**CONTROLLED DISCLOSURE**

### **4.3 Work To be performed by Contractor**

#### **General**

This section stipulates the work to be performed by the Contractor for the works, based on the minimum standard of maintenance specified by the Employer. The Contractor ensures that the plant meets the criteria specified in this section.

#### **The Contractor:**

- Provides a maintenance plan and schedule, compiled in liaison with Duvha Power Station Operating Contractor. The Contractor submits this maintenance schedule to the Services Manager for acceptance before the Contractor starts with any work on Site.
- Provides complete maintenance of all mechanical plant, electrical plant, civil works and structures.
- Provides 24 hours on-site supervision, suitably qualified to perform electrical resets and plant isolations (HV and LV as Responsible Person according to Eskom Plant Safety Regulations).
- Performs repairs and provides on-site support for breakdowns on a 24-hour basis (7 days a week). Response times for failures call-outs are 60 minutes from call.
- Collects from the Employer's yard, installs (when required) and performs the routine maintenance of the free issued spares.
- Where applicable, procures, delivers and stores all other spares agreed with Services Manager and consumables necessary to maintain the overland conveyor and OTS systems.
- Obtains all maintenance parameters from the Original Equipment Manufacturers (OEMs). This forms the basis of the Contractor's maintenance procedures, for acceptance by the Services Manager.
- Establishes and maintains a records keeping system, accepted by the Services Manager. The Contractor records all routine inspections, failures, the causes, the remedial actions taken, etc. SAP PM system (at Duvha Power Station) should be utilised for this purpose as per Eskom's Work management Process.

#### **Co-operation with Others**

The Contractor interfaces with Services Manager for planned shutdown periods for maintenance purposes, taking due cognisance of the mine's coaling production schedules.

The Contractor interfaces with Services Manager for any unplanned maintenance and operating activities (e.g. breakdown recovery, etc.)

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The Employer will, during the course of the contract, implement modifications or changes to the conveyor system and/or peripheral systems whenever necessary. The Employer may choose to utilise others, with whom the Contractor will co-operate.

The Contractor attends the weekly maintenance meeting, arranged by Services Manager at their offices.

The Contractor designs maintenance schedules in co-operation with Duvha Power Station Quality Assurance and Quality Control and Operating Contractors' plant log sheets. These are submitted to the Services Manager for acceptance before the Contractor starts with any work on Site.

## **Supervision**

The Contractor provides a supervisor or delegated employee(s) on site 24 hours per day, 7 days per week.

The Contractor's supervisor and/or delegated employee(s):

- Is/are qualified to perform first-line fault finding when equipment has failed and repair to clear fault.
- Is/are qualified and certified competent as Responsible Person in terms of
- Eskom's High Voltage Regulations and Plant Safety Regulations systems.
- Apply Permits-to-Work for any such required maintenance work on the works
- information.
- Is, on the initiative of the Contractor trained and authorised, for the Employer's account in the use of Eskom's Plant Safety Regulations and the Operating Regulations for High Voltage Systems.

## **Permit-to-work arrangements**

- The Contractor implements a Permit-to-Work system with lock-out facilities in accordance with the Eskom Plant Safety Regulations and the Operating Regulations for High Voltage Systems.
- Prior to the commencement of any activity that affects the operation of the plant, the Contractor arranges for the required work to be done with the Eskom appointed Operating Contractor.

### **4.3.1 Overland Conveyor and OTS Systems**

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#### **4.3.1.1. Electrical Maintenance**

##### **Overland Conveyor**

The Contractor provides the electrical maintenance, repairs and inspections in accordance with the details and inspection frequencies indicated below, including that which the Contractor stipulates in his Works Information. This includes removal of damaged/ old component from plant and replacing it with new component of the same specification, model and type.

The Employer provides the power supply to the works. The Employer's responsibilities end at the cable connections to the transformers in the transformer yards. The limits of the Contractor's responsibilities with regard to power supply are depicted by drawing 0

Overland Electrical System Layout 0.57/518 sheet 4 rev 2 as well as:

- Sub Station 1, situated next to drive house 4 excluding PLCs
- Sub Station 2, situated next to drive house 2 excluding PLCs
- Emergency Offloading Sub Station, situated next to the boom conveyor
- High mast lights
- Sub- Station 3 situated next to 2A&B tail at the mine. The Contractor is responsible for the maintenance of the bus section the two incomers and the two transformers

All safety circuits e.g. hooters, trip wires, under-speed switches, detrain switches, block chute detectors, emergency stops, local stops, take-up car limits and hydraulic coupling limit switches are tested and inspected for correct operation by the Contractor, at least once a month.

##### **OTS System**

The Employer provides the power supply to the work area. The Employer's responsibility ends at the cable from the switchgear to the field equipment, including the terminations. The limits of the Contractor's responsibilities with regards to power supply, are the terminations of the field equipment (i.e the terminations are the responsibility of the contractor). The Contractor also maintains the earthing.

The complete reclaim conveyor system from the Buffalo feeder, up to and including to the last chutes that throws onto conveyor 6A&B and conveyor 8A&B.

- All the items referred to in the Titaco Strategic Coal Stockyard Manual
- (E5071/2.3.10A, E5071/2.3.11A and E5071/2.3.12A) are included as the Contractor's responsibility, excluding: the Moveable conveyors. Note that the shiftable conveyor has been shortened and permanently fixed between the Buffalo feeder and the reclaim conveyor.

#### **CONTROLLED DISCLOSURE**

## **All switchgear**

- All these items referred to in the Titaco Strategic Coal Stockyard Manual (E5071/2.3.10A, E5071/2.3.11A and E5071/2.3.12A) are to be serviced and maintained.

## **Buffalo Feeder Breakers**

All the items referred to in the Buffalo feeder breaker manuals and the 3,3kV power supply from the 12 kiosks is included as the Contractor's responsibility to maintain.

## **Motors**

The Contractor inspects and ensures that motors:

- are kept clean and free from any coal spillage and dust, always.
- are not to run if wet, and
- are not submerged in mud or coal slurry.
- are sufficiently lubricated

In the event of any of the above happening, the motor is thoroughly cleaned, dried out and serviced, before being made operational.

The Contractor inspects and records motor parameters during weekly inspections. In addition, the Contractor ensures that:

- monthly tests are carried out to monitor electrical current and vibration levels; and
- the findings of the tests are documented to determine when the motor must be serviced or overhauled.
- motors are not to run with abnormal vibrations; and
- in the event of abnormal vibrations being detected, the motor is rectified immediately.
- motors are not to run when the cooling system is not in operation, or defective; and
- an abnormal rise in temperature is attended to.
- the thermal rating of the motor is not exceeded.
- bearing temperatures to be monitored.

### **CONTROLLED DISCLOSURE**

Motors are not started more than that specified by the manufacturer of the motor, within a given time frame.

## **Switchgear**

All switchgear is inspected and maintained in accordance with OEM specifications which are obtained from the Duvha P/S library. In some instances, the Contractor will be required to execute maintenance with PTM, Eskom protection system maintenance contractor.

The Contractor shall execute the following maintenance:

- Remove all panel covers and clean board internally
- Clean and inspect all busbars, links, cable connections
- Clean and inspect VT's
- Reposition cable number tags if required
- Check wear-gap
- Replace vermiculite where necessary
- CT inspection and cleaning
- Replace broken plastic screws on panel covers
- Pressure test Vacuum bottles
- Insulation test Vacuum bottles
- Ductor test Vacuum breakers
- Links to be function checked
- Clean and inspect all breakers
- Lubricate breakers and function checks

## **Power Supply**

The Employer is responsible

For the total overland conveyor electrical reticulation, excluding the 11kV incoming feeders from station board 1 and 2.

For 11kV overland conveyor board 2A and 2B maintenance, the Contractor is responsible for arranging the high voltage permits.

All the UPS on the plant to be serviced on a three-monthly bases

### **CONTROLLED DISCLOSURE**

The transformers are fed by an 11kV supply from the IFALETHU grid, and reduced to 3,3kV, 400 & 380V. From the transformers, the following sub stations are fed:

- the sub-station 1 switchgear.
- the sub-station 2 switchgear.
- the sub-station 3 switchgear Bus section incomer
- sub-station 3 transformers and 11kv supply cables
- the OTS sub-station switchgear.

Power supplies to all connections as above are:

- kept free of dust; and
- cleaned.

### **OTS Substation Transformer Maintenance**

The Contractor:

- Repairs oil leaks if any
- Checks all cable connections for any damages, replace if damaged
- Checks and verify the transformer oil levels and top up if required.
- Checks the breathers and the silica gel if still in good condition and replace if required.
- Takes transformer oil samples and analyse for kV, moisture and DGA
- All defects to be reported to System Engineer or supervisor

### **Junction boxes**

The Contractor inspects and ensures that:

- all junction boxes are kept closed at all times;
- junction boxes are cleaned weekly.
- the hinges and locking devices are maintained and if found defective, repaired immediately.

### **Lighting**

The Contractor:

#### **CONTROLLED DISCLOSURE**

- replaces defective lamps, fittings and lenses daily.
- keeps continuity when replacing lamps, fittings and lenses using the same type throughout the plant.
- verifies and maintains the OHSA required light intensity (lux) per area every 6 months.
- cleans all lighting boards.
- cleans all light fittings and lenses.
- Replace lighting cable when necessary

The Contractor maintains and cleans all the light systems on the overland and OTS system including:

- entire overland conveyor system lighting
- entire reclaim conveyor system lighting,
- high mast lights at the weigh bridges
- high mast lights at the offloading area
- lights on the 3 Buffalo Feeders
- 4 skid mounted lights

In addition to this the Contractor further weekly inspects all the extension cables on the lighting skids to the feeder breakers.

### **Pull key and trip wire system**

The Contractor inspects and ensures weekly that:

- lids on switches remain on tightly.
- switches are sealed to prevent dust or water from entering the electronic circuits.
- pull key switches are mechanically and electrically in working condition; and
- pull wires are well maintained and can move freely.

### **Rotating speed sensors/switches**

The Contractor inspects and ensures weekly that:

- The friction slots on the pick-up wheels are clear of dust build up and debris, to always ensure wheel traction on the belt.

#### **CONTROLLED DISCLOSURE**

### **Belt alignment switches**

The Contractor inspects and ensures weekly the functionality of:

- Inspect activating arms for wear and tear
- Inspect power cables for any damage
- Inspect casing for physical damages
- Ensure the switch is intact into position

Spots on belts that can damage this equipment are immediately repaired.

### **Block chute detectors**

The Contractor inspects and ensures that:

- the sensors and pickups are cleaned on a weekly basis to prevent trips of the belt; and that
- the functionality of the pick-ups and sensors are always maintained.

### **Belt tension detector**

The Contractor inspects and ensures that:

- the belt tension detector is always functional and inspected weekly.
- the connector between the cell and the transmitter is always dry and dust-free; and
- an approved calibrating laboratory (for example, SA Scale) calibrates the load cell used to measure the tension of the belt.
- the test is conducted every 12 months;

### **Protections**

The following are examples of protections:

- hooters, trip wires, speed switches, detrain switches, block chute detectors, emergency stops, local stops, take-up car limits, fire protections, belt rip detectors and hydraulic coupling limit switches.

In addition to the monthly test for correct operation, the Contractor inspects and ensures that:

- all above plant are always operational.
- repaired immediately when defective.

#### **CONTROLLED DISCLOSURE**

- cleaned; and the status is recorded on a weekly basis

### **Tripper cars**

The Contractor inspects and ensures that:

- tripper car hot-rails (busbars) and brushes are in good operational condition
- thruster brakes are operational and functional
- Clean tripper car wheel tracks

### **High mast lights**

The Contractor inspects and ensures that:

- all lights on the two high masts next to sub-stations 2 & 4 are working and repaired when defective.

### **Sub stations**

The Contractor executes maintenance as per the Eskom maintenance strategies in all overland conveyor belts substations 1,2 and 3 including OTS and Driefontein Dam substations:

## **SYSTEM COMPONENT**

### **ACTION**

24V Brds and Chargers Remove panel covers and clean boards and chargers

Check all busbars, cabling and switchgear panels

Check all fuse holders, clip-on terminals and connections

Check that all the SCR's are operating correctly (phase balancing)

Check and correct voltage& current settings

Verify that alarms are received and acknowledged by an operator

Measure the standing load current

Measure the ripple voltage from the charger/UPS to the battery bank

Perform DC integrity test when unit is within the operators control& the plant should not trip

Clean board internally

Check and correct alarm settings

Carry out 24V DC dual supply checks (50 Amp and 16 Amp supplies)

Check for voltage differences between "O" potential and MZ (non- current caring supply)

Measure and normalise the ac incoming supply voltage

### **CONTROLLED DISCLOSURE**



Replace indicating lamps

Record the charger voltage and current

Ensure the battery charger is in float mode when taking readings

Ensure the battery voltage does not drop by 10%

Calibrate chargers

Check, record and report all alarms to the responsible person

Perform full functional test

#### **Inverter Clean inverter panel**

Check all connections, fuse holders and terminals

Calibrate inverter charger

Clean filters

Check if alarm wiring is correct

Check all alarms

Perform full functional test

Tighten and torque the battery cell connections

#### **Batteries Check for cracks and leaks on the cells**

Measure voltage on each cell and record it

Check connectors for corrosion

Check Flaking of cells

Inspect the water level and top up if necessary

Check for hot spots on termination points

Check battery stands for corrosion

Based on routine maintenance reading perform equalise charge on every battery bank with cells out of step.

Measure and record voltage on the all battery cells

Perform discharge test on the 24V & 220V battery banks and record the results

#### **CONTROLLED DISCLOSURE**

Electrolyte Top up the cell if below minimum mark

Use demineralised water to top up

Log the volume of water consumed and cell number

Measure pilot cell Voltage

Measure pilot cell temperature (25 degrees C)

Take specific gravity measurements (SG) on all the cells

Battery Cabinet Inspect and replace the safety equipments if need be

Inspect ventilation whether is working

Inspect lighting

Inspect and clean the room

The Contractor inspects and ensures weekly that:

- the area is clean; and
- lights are maintained.

The Contractor, every 3 months, inspects and cleans vacuum breakers (3,3kV breakers) and when doing so, obtains a permit to work and ensures that the vacuum breaker is racked out when the front panel is removed.

The Contractor:

- cleans the breaker motor.
- visually inspects for the appearance of moisture in the vacuum tubes; glossy silver color for normal conditions and milky white or transparent color indicating deterioration; and replaces it if defective.
- inspects all insulated parts for cracks.
- inspects current carrying components for corrosion and clean if corroded.
- tightens all connections and bolts.
- inspects mechanism for free moving parts.
- inspects and cleans auxiliary contacts.
- inspects electrode for wear.
- inspects cable connections at back of panels for security.
- cleans panel, (excluding PLC panel).
- visually inspects all contactors and relays for free movement.

#### CONTROLLED DISCLOSURE

## **Substation 1, 2 and 3 Transformer Maintenance**

The Contractor:

- Repairs oil leaks if any
- Checks all cable connections for any damages, replace if damaged
- Checks and verify the transformer oil levels and top up if required.
- Checks the breathers and the silica gel if still in good condition and replace if required.
- Takes transformer oil samples and analyse for kV, moisture and DGA
- All defects to be reported to System Engineer or supervisor
- Sub- Station 3 situated next to 2A&B tail at the mine. The Contractor is responsible for the maintenance of the bus section the two incomers and the two transformers

## **Instrumentation**

The Contractor maintains all instrumentation, indicators, pressure switches, flow switches on the plant.

### **4.3.1.2 mechanical maintenance of overland conveyor and ots systems**

Contractor is responsible for all plant within the Site. The following buildings and civil works form part of the scope of the works, to be maintained by the Contractor:

Structures:

- sub- stations.
- drive and transfer houses
- Conveyor structures and cladding
- All the crawl beams in the plant to be inspected and load test once a year

The Contractor provides the routine mechanical maintenance, repairs and inspections in accordance with the details and inspection frequencies indicated below.

## **Gearboxes**

The Contractor inspects all gearboxes weekly for.

- oil leaks.
- excessive operating temperature, noise, vibrations; and check
- loose bolts
- exhaust breather and replaces:
- worn seals.

## **CONTROLLED DISCLOSURE**

The Contractor performs condition monitoring of all gearboxes, performs fault diagnosis when faults are detected; and tops-up oil, whenever necessary. Replace damaged or defective gearboxes and perform laser alignment of the entire system. The Contractor, furthermore, greases all backstops and anti-run back devices on all drive gearboxes on a weekly basis.

### **Pin and fluid drive couplings**

The Contractor inspects, once a week:

- for uneven running due to damaged components; and
- removes covers and inspect for faulty or damaged couplings
- uneven running, due to alignment
- bearings; and
- for non-functional fusible plugs, due to low oil level or overload.
- Oil leaks
- Damaged coupling rubber buffers The Contractor:
- realigns where necessary; and
- replaces bearings, where necessary.

### **Holdback Units**

The Contractor daily:

- performs visual inspections, and
- inspects oil levels regularly and re-fills, when necessary.
- Inspect for normal running temperatures and if there is a concern rectify

The Contractor, once a week:

- Inspects for oil leaks; and
- Do oil changes to the unit
- Visually inspects condition of arm and locking pins

The Contractor monthly cleans internals with degreasing agent and inspects stop lugs for wear/damage. If lugs are damaged or worn, replace with new. (Never use grease for internal lubrication of backstops.)

### **Conveyor Idlers and frames**

The Contractor daily inspects for:

- Idlers running noisy
- worn shells or end caps
- broken idler bases
- Damaged idler frames

#### **CONTROLLED DISCLOSURE**

- material build-up and
- clean dirty areas and
- replaces worn or defective idlers
- replace seized idlers and running with high temperatures
- Replace damaged idler frames with correct frames

Idler frames are stencil marked by the Contractor for unique identification for idler replacement purposes. Replace damaged idler frame with correct frames to be provided by the employer.

### **Wire Rope**

The Contractor, every two weeks:

- inspects for damage and corrosion
- clean and re-grease if required
- replaces elongated or worn rope, or and when cut short. Replacement must be done using correct wire diameter and must be rubber embedded
- replace switches if not functional

### **Pulleys, bearings and plumber blocks**

The Contractor, weekly, inspects and repairs for:

- Noisy bearings or bearings running at high temperature
- Replaces worn bearings and seals
- Rectifies the damaged pulley lagging and replaces. Only lagging, accepted by the Services Manager is used.
- Lubricate all bearings in accordance with the accepted planned maintenance schedule.
- Replace all worn pulleys
- Check pulleys for worn bend shafts or damaged shafts

### **Routine Belt Maintenance (ST1000 and Class 800, 3ply, 1500mm width)**

The Contractor visually inspects all steel cord belts and ply belts conveyor belting weekly. Perform belt scanning on steel cord belts yearly and provide a report. Do belt thickness test every six months and provide report. Replace belts as per agreed schedule with the Employer.

The following faults are specifically noted

**Belt detraining:** In such event the Contractor immediately trains the belt. Plant in operation permit will be used.

**Splice separation (condition):** In such event the Contractor immediately adjusts the scraper or repairs the splice based on the condition after detailed assessment. If splices start to pull apart, the complete splice must be replaced.

#### **CONTROLLED DISCLOSURE**

Steel cord integrity inspection (belt scanning) is performed every six months by Engineering and the copies of the reports for each steel cord belt are presented to the Services Manager for acceptance. The reports contain all the radiographic pictures taken during the inspection.

### **Belt Splicing**

All conveyor belt splicing is subject to accepted industry standards, the standard and procedure employed being subject to acceptance by the Contract Manager. Both hot and cold splices will be applicable based on the Contract Managers' decision.

The Contractor marks each splice with a unique number for registration and capturing. This includes splice number, date of splicing and company name. Insert done on all steel cord belt should be to a minimum of 60m long.

Damaged or cut out conveyor belt pieces must be removed by the Contractor and taken to the Employer's facility for scrapping.

Maximum steel cord splicing duration is 8hrs to 10hrs for splicing.

Maximum ply belt splicing duration is 7hrs to 9hrs. Mechanical clip joints are only allowed under emergency and can only be run not for more than 2 weeks.

Eskom procedure unique identifier 240-120532564 to be used as a benchmark when constructing a splice joint on site.

### **Scrapers**

The Contractor inspects weekly for improper belt cleaning, in such event the Contractor:

- Immediately replaces the blade when worn/damaged; and
- Adjusts blade tension.
- Ensures when tensioning the scraper that damage to conveyor belt part has been taken into consideration.
- The contractor will also replace old scrapper units with new when required. Scraper replacement: only blades need to be replaced and frames should be reused. During inspection it is the responsibility of Contract to clean spillages within the scraper for proper visual inspection. In the situation of frame being damaged, Employer will provide with a complete new scraper.

Note: Duvha is using Martin engineering scrapers, Brelko scrapers and Flexco scrapers

### **Rubber Skirtings**

The Contractor inspects weekly for material build up, wear and tear, physical damages and gaps

- In such event the Contractor adjusts skirtings to prevent spillages.
- Replace damaged skirtings with new

#### **CONTROLLED DISCLOSURE**

## **Chutes**

The Contractor:

- Inspects chute liners for wear and erosion and repairs if necessary.
- Inspects for missing liners and replaces if necessary.
- All chutes to be lined up with 25mm thick ceramic tile liners on the mainstream flow and 12mm on the sides.
- Check for leaking chutes and repair properly
- Ensure that all inspection doors are intact and closing properly

## **Take-up car and counterweight**

The Contractor

- inspects on a weekly basis for any type of failure including damaged structures.
- Ensure all weights are intact and not catching on the main pole.
- ensure that sheave wheels are greased yearly.
- Ensure take-up carriages are in good condition and freely moving on the rails.
- Ensure take-up pulley is properly running and not misaligned
- Check for any damages on the structure due to belt rubbing on or bend
- Ensure the take-up carriage is not running in coal spillages

## **Tripper cars**

The Contractor:

- inspects gearbox oil once a month.
- Check gearbox oil every six month and replace where necessary
- inspects pulley bearings once a week.
- inspects rails for deformation once a week and aligns if necessary.
- inspects belt detraining through tripper car once a week and aligns if necessary.
- inspects wheels for shape and functionality once every 6 months.
- inspects and function checks the effective operation of the tripper car brakes once a week.
- Inspection of grizzly bars every week and repair if required.
- Inspection of rails every month and repair if required

### **CONTROLLED DISCLOSURE**

### **Overland conveyor belt and drive house cladding**

The Contractor:

- maintains all cladding; and
- repairs and replace loose and missing cladding.

Cladding is removed to do maintenance work on plant areas, which are difficult to access, and is replaced immediately after completion of the work.

### **Coal Staithes**

The Contractor:

- maintains all walkways, grizzly bars, platforms, rails, fire pipes and sheeting. Replace if need arise.

### **Safety signs**

The Contractor:

- ensures that all safety loading signs, and general safety signs are visible and clean at all times,
- ensures that the “NO UNAUTHORISED ENTRY” signs at drive houses are displayed at all doors, and
- repaint or refit signs whenever damaged or faded.

## **5. Access control**

The *Contractor* locks and controls access to:

- overland conveyor servitude fenced areas,
- Sub-station **Access** fenced areas and buildings shall be adhered to as per the Eskom PSR and ORHVS.

## **6. Communication requirements**

- The *Contractor's* tripper car drivers are in constant radio communication with the mine control room operator.
- The *Contractor's* on-site supervisor is in constant radio communication with the mine control room operator and tripper car operators.

#### **CONTROLLED DISCLOSURE**



- The *Contractor* provides and maintains portable radios to Sereti Mine frequency and range specifications.
- The *Contractors* shall ensure that radios are maintained at all times for effectiveness

## 7. PERFORMANCE SPECIFICATION

- The employees must be in a mental and physical healthy condition to be able to work an average of 12 hours per shifts for the Department.
- Working of overtime as per cleaning requirements when needed.
- Employees must be medically fit.
- Employees meet requirements of Eskom Security access, Police Clearance checks.
- Minimum educational requirement for General workers/ Cleaner is Grade 12.
- Minimum requirements for **Supervisors** are Grade 12 plus 3 years Cleaning experience

### 7.1 Working times

#### People restrictions, hours of work, conduct and records WORKING HOURS

All plant cleaning activities must be based to accommodate the Duvha Power Station working hours as follows:

##### Office hours for Day-shift workers

- Monday to Friday, 07h00 to 16h15
- Lunch Break 12h00 to 13h00

##### Shift workers

- Monday to Sunday, 24 hrs,
- 12 hour cycle shift
- Shift roster (A – D Shift) must be drawn up and agreed upon with the Service Manager before commencement of the contract

Working hours shall remain flexible to alteration, if required. No overtime will be paid if it was not approved by the Service Manager prior. The *Contractor* shall implement a stringent electronic time management process which requires less human intervention, e.g. fingerprint or facial scanning recorders used for access control and time and attendance systems, etc.

#### CONTROLLED DISCLOSURE

Employees are not allowed to go to the service manager but through the site manager. The service manager will not be involved in any employee/ employer disputes unless it affects remuneration that will obviously affects the physical works which end up affecting the coal supply to the station.

## **8. Required PPE (Specification to be supplied under SHEQ)**

- Overalls-specific to activity
- Safety boots
- 3-point chin strap hard hat
- Gumboots
- Gloves
- Safety goggles
- Face shield
- Ear plugs/muffs
- Dust masks
- Cloth masks
- Respirators

## **9. Required Tools/Resources**

- All Operation staff tools used in the trade for an individual competency. This is a minimum requirement for the contract in terms of skill requirement.
- Other tools and workshops to be provided by the employer in order for the contractor to execute the scope within quality, time and cost effective methodology.

## **10. Management meetings**

There will be a monthly meeting for the *Contractor* with the *Employer* held at the *Employer's* premises where contract issues will be discussed.

- Safety meeting (once a month / as and when required)
- Contractor's meetings (to be specified)
- Assessments meetings (end of the month on the 25th)

### **CONTROLLED DISCLOSURE**

- Any other meetings relating to the *Contractor's* outputs or necessary for business continuity.
- Risk register meeting with the client.

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

## **11. Contractor's management, supervision and key people**

The *Contractor's* staff structure –The employer must approve any changes to the staff structure, and after the approval the contractor shall submit an updated staff structure.

The *Contractor* shall provide a competent representative to be available on site during all normal working hours (Supervisor).

The Contractor's representative will be required to keep the time sheets which are required, signed at the end of each month.

NB: The Contractor's representative will assume the role of a supervisor or lead for this contract

## **12. Documentation control**

The service provider shall submit all proof of time sheets and delivery note to the employer for assessment. Cleaning control sheets to be signed after each cleaning is completed When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system. No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Rotek Industries SOC Ltd.

## **13. Invoicing and payment**

Invoicing and payment turnaround time is 30 days. Assessments are to be conducted from the 26th of each month.

## **14. Contract change management**

Task Order form to be used when work within the service is instructed to be carried out within a stated period of time. A task Order will be sent to the *Contractor* via an email. In the case of a compensation event, the *Contractor* must give the *Employer* an early warning and a quotation for

CONTROLLED DISCLOSURE

the total costs, must be submitted electronically by the *Contractor* for that compensation event by email

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

All hours worked by the *Contractor* will be done so on approval by the *Employer*. Timesheets will be submitted to and kept by the *Employer* on a weekly basis, and these will be used for assessment purposes.

## 16. Training workshops

- Any training required by the *Employer* will be provided e.g. Ethics, HIRA, etc. however any other training additional that the *Contractor* will need, the training costs will be for the *Contractor*. Training may not be conducted during working hours, unless permission is given by the *Employer*.
- The *Contractor* will be trained during the Job Specification Induction training that will be provided by the *Employer* at the beginning of the contract. The *Contractor* may also be trained during Work Stoppages and also any other training as per employer's requirements.
- The following trainings are **mandatory** for the Supervisor and Team leaders. The cost will be for the *employer*.
  - Safety, Health and Environment Representative (SHE Rep.)
  - Applying SHE Principles and Procedure
  - Hazard Identification and Response
  - First Aid level 1
  - Plant Safety Regulations (**each employee will be given 2 chances to pass/complete this training failure to which will lead to termination of services/contract for the affected employees**)

## 17. Health, Safety, Environment and Quality assurance

### 17.1 Health and safety risk management

The Contractor shall at all times comply with the health and safety requirements prescribed by law as they may apply to the services.

#### CONTROLLED DISCLOSURE

The Contractor shall, when coming on site abide by the Lifesaving Rules and COVID-19 safety requirements at all times. These will be provided by the Employer on the start of the contract. The Contractor shall also abide by Safety, Health and Environmental Specifications for Contractors Procedure, which will also be provided by the Employer.

The Employer follows an accident/ incident prevention policy that includes the investigation of all accidents/ incidents involving personnel and property. This is done with the intention of introducing control measures to prevent recurrence of the same incidents. The Contractor is expected to fully co-operate to achieve this objective. Refer to 32-95\_Environmental, Occupational Health and safety Incident Management Procedure

The Contractor will be subject to periodic audits by the Employer in order to ensure compliance with the plan. Any deviations will be corrected to the Employer's satisfaction.

The Project Manager has the right to stop the Contractor's work activities which, in the opinion of the Project Manager, is un-safe. The Contractor may only continue with work activities when all safety deficiencies have been corrected to the Service Manager's satisfaction. The Contractor shall have no claim against the Employer in respect of delay due to the above.

## 17.2 Environmental constraints and management

The Contractor shall comply with ERI management system. This includes the identification, collection, storage, transportation and disposal of waste. Hazardous waste shall be disposed of in line with the applicable environmental legislation. It is important to note that all spillages must be cleaned immediately and reported to the project manager as soon as possible. It is the responsibility of the polluter to clean all spillages and for the rehabilitation of the polluted land and the cost associated with that.

**NB: In cases of inclement weather, the Project Manager will assess the risk of continuing with the works. When it is unsafe to continue, the Project Manager will stop the works and payment will be per the work covered in this instance.**

## 17.3 Quality assurance requirements

The *Contractor* implements a quality system and maintains the quality system until the completion of the whole of the *works*. The system, will as a minimum, comply with the provisions of the ISO9001 series. The system will be to the *Employer's* satisfaction and will be accepted prior to the commencement of any work on site. The *Contractor* will be subject to self-assessments by the *Employer* in order to ensure compliance with the system. Any deviations will be corrected to the *Employer's* satisfaction.

The *Project Manager* has the right to stop the *Contractor's* work activities which, in the opinion of *Project Manager*, does not meet the requirements of the system and will have a detrimental effect on plant performance. The *Contractor* may only continue with work activities when all deficiencies have been corrected to the *Project Manager's* satisfaction. The *Contractor* shall have no claim against the *Employer* in respect of delay due to the above.

### CONTROLLED DISCLOSURE

The *Contractor* ensures that all plant and materials for the *works* are to the standard and quality accepted by the *Employer* and ensures that they are suitable for the purpose intended by the manufacturer.

The *Contractor* will work according to the *Employer's* standards, specifications, guidelines and procedures. Where no standards, specifications, guidelines and procedures are available, the *Contractor* will work according to the Generation Quality manual and professional guidelines. Where possible, standards will be reflected in the Task Order.

The employer shall evaluate, control and monitor the performance and effectiveness of the Contractor

## 18. People

Eskom Holdings Limited's requirements regarding employment of unskilled or semi-skilled workers are as follows:

**ERI requires that during recruitment of unskilled or semi-skilled labour, a contractor should make every effort to employ minimum target of 100 % suitable candidates from all disciplines from the local community and will only resort to other avenues if the local community cannot provide the required resources.**

**The contractor will be required to pay rates as per the Metal and Engineering Industries Bargaining Council (MEIBC). The rates can be found on the MEIBC website**

## 19. Correction of defects

If there is part of work that the *Employer* is not happy with, this will be indicated to the *Contractor* and will have to be rectified by the *Contractor* immediately where reasonably possible or within 5 working days after the defect was reported.

## 20. Plant & Materials provided by the *Employer*

- a. Water and Electricity
- b. Lighting and Ventilation
- c. Ablution facilities
- d. Sitting facilities
- e. Kitchen facilities
- f. All required tools
- g. Specialised PPE

**NB: The *Contractor* will be responsible for their meals and own accommodation**

CONTROLLED DISCLOSURE

## **21. Working on the Affected Property**

Under no circumstances will the *Contractor* do the work without proper PPE. The Supervisor on the *Contractor's* side will make it his duty to make sure that this is properly addressed.

### **21.1 Employer's site entry and security control, permits, and site regulations**

The Contractor's access to site shall be in line with the Site access procedure.

The Contractor shall be required to make an application for his employees to enter site for the duration of the contract, including defects period. The permits shall only be issued once the Contractor's employees have attended the safety induction training and have undergone medical checks. The safety induction will be for the Employer's account.

The medical checks will be for the Contractor's account.

All contractor employee shall provide a criminal record check prior to security allowing access to the station. The cost of this is for the contractors account.

### **21.2 Documentation control**

The service provider shall submit all proof of purchase, time sheets and delivery note to the employer for assessment. Cleaning control sheets to be signed after each cleaning is completed (in respect of the COVID 19 pandemic)

### **21.3 Invoicing and payment**

Invoicing and payment turnaround time is 30 days. Assessments are to be conducted from the 26<sup>th</sup> of each month.

### **21.4 Contract change management**

Task Order form to be used when work within the service is instructed to be carried out within a stated period of time. A task Order will be sent to the *Contractor* via an email. In the case of a compensation event, the *Contractor* must give the *Employer* an early warning and a quotation for the total costs, must be submitted electronically by the *Contractor* for that compensation event by email

#### **CONTROLLED DISCLOSURE**

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

All hours worked by the *Contractor* will be done so on approval by the *Employer*. Timesheets will be submitted to and kept by the *Employer* on a weekly basis, and these will be used for assessment purposes.

## 22. Training workshops

- Any training required by the *Employer* will be provided e.g. Ethics, HIRA, etc however any other training additional that the *Contractor* will need, the training costs will be for the *Contractor*. Training may not be conducted during working hours, unless permission is given by the *Employer*.
- The *Contractor* will be trained during the Job Specification Induction training that will be provided by the *Employer* at the beginning of the contract. The *Contractor* may also be trained during Work Stoppages and also any other training as per employer's requirements.
- The following training is necessary for the Supervisor and Team leaders. The cost will be for the *Contractor*.
  - Safety, Health and Environment Representative (SHE Rep.)
  - Applying SHE Principles and Procedure
  - Hazard Identification and Response
  - First Aid level 1

## 23. List of drawings

N/A

## 24. Acceptance

This document has been seen and accepted by:

Name	Designation
ERI BMS Representative	HOD

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## **25. Revisions**

<b>Date</b>	<b>Rev.</b>	<b>Compiler</b>	<b>Remarks</b>

## **26. Acknowledgements**

None

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