

 Eskom	Specification	Medupi Power Station
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Title: **Medupi Power Station Fuel oil, LPG and burner Outage Scope of Work**

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Area of Applicability: **Medupi Power Station**


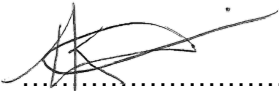

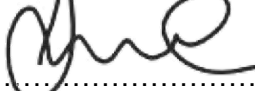
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1. INTRODUCTION

The Fuel oil, LPG and burners Outage Scope of Work is developed to assist Medupi Power Station to achieve and sustain URS requirements (92% UCF, 6% PCLF and 2% UCLF). This philosophy is based on the Medupi Power Station Outage Philosophy that includes but not limited to:

- Outage duration counted from breaker open to breaker close.
- Ensuring that Medupi Power station is operated safely, reliably and within URS requirements.
- Optimising the life of components by allowing refurbishment/replacements before fatal failures.

Medupi Power Station have decided to outsource the unitised Fuel Oil, LPG and Burners system Outage Maintenance Scope service function to a suitably qualified, experienced and well established Contractor. The duration of this contract will be 36 months. The maintenance scope will include mechanical and Control & Instrumentation (C&I). This document describes the detail of the applicable plant areas, scope of work, standards, quality requirements, specifications, terms & conditions as well as the criteria to qualify for the tender.

2. SUPPORTING CLAUSES

2.1 SCOPE

The scope of this Generic Outage SOW is limited to the equipment on the Medupi Fuel Oil & LPG and Burners Plant. The boundaries of the plant in this case are the entry of the Fuel Oil and LPG to the power units and the Fuel Oil burners as exit points. The scope does not include domestic electric circuits, civil structures, substations and firefighting equipment. It only includes the following equipment:

- Unitised fuel oil supply and return line
- Unitised LPG systems
- Coiling air fans
- Burners

2.1.1 Purpose

The purpose of this document is to define Fuel oil, LPG and burners Outage Generic SOW, which is to highlight tasks needed to be carried out during different type of planned outages.

2.1.2 Applicability

This document shall applicable to Medupi Power Station.

2.1.3 Effective Date

This document will be effective from the date of authorisation.

2.2 NORMATIVE/INFORMATIVE REFERENCES

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

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2.2.1 Normative

- [1] ISO 9001 Quality Management Systems
- [2] 240-92360717 Medupi Power Station Outage Philosophy Rev 7
- [3] N.PSZ45-244 Pipe Support Standard
- [4] 240-5647004 Thermal Insulation Standard
- [5] 36-681 Plant safety regulations
- [6] SANS 347:2012 Categorization and conformity assessment criteria for all pressure equipment
- [7] Occupational Health and Safety Act 1993: Pressure Equipment Regulation
- [8] 36 - 505 Rev 1: Personnel and Entities Performing Welding Related Special Processes on Eskom Plant
- [9] 240-106628253 Standard for Welding Requirements on Eskom Plant
- [10] 240-83540088 Requirements for NDT on Eskom Plant Standard

2.2.2 Informative

- [11] 240-89339278 Medupi Fuel oil Maintenance Execution Strategy
- [12] 240-89251471 Medupi Fuel oil plant Spares Strategy
- [13] 240-85498379 Medupi Maintenance Execution Strategy for Milling Plant
- [14] 240-89251471 Medupi Power Station Milling Plant spares Strategy

2.3 DEFINITIONS

Definition	Explanation
Calibrate	The definition of calibrate means to correct or adjust the graduations of instruments that measures, in comparison to a certain standard
Condition Monitoring	Non-intrusive monitoring carried out to determine the physical condition of asset/plant and equipment. Tube wall thickness etc.
Contractor	Service provider contracted for supplying specific service to Eskom, Medupi Power Station.
Employer	Eskom, or Eskom Medupi Power Station
Inspection	Activities, which by means of examination, observation or measurement, determine the conformance of material, parts, components etc., to predetermined specifications and quality requirements.
Maintenance Philosophy	Principle structured approach that governs the methodology through which the plant is maintained.
Outage	An outage is a state of an item being unable to perform its required function. An outage can either be planned or unplanned. This document covers planned outages.
Outage Duration	The outage duration is the time from breaker open to breaker close.

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Definition	Explanation
	Allowance must thus be made for cooling of the piping, decommissioning and testing of the Turbine and Boiler protections before work on the unit can start.
Outage Work Scope	The outage work scope consist out of the following items a) Critical High wear items that can only be done during an outage b) Statutory activities that require a unit outage c) Technical plan items that need to be done during an outage d) Defects that can only be done during an outage e) Critical testing that require an outage (Floating of safety valves) f) Protection testing of turbine and Boiler protection.
Refurbish	To repair and sustain components by replacing internals e.g. gasket for valves.
Replace	The item (equipment or component) is discarded and replaced by a new/refurbished spare unit.
Routine Service	The plant/machine receives a service during which routine checks are made such as oils and filters changed, greasing done and adjustments made.
Test	All activities required determining the actual performance or condition of an item.

2.4 ABBREVIATIONS

Abbreviation	Description
C& I	Control and Instrumentation
CCPM	Critical Chain Project Management
GI	Guarantee Inspection
GO	General Overhaul
IN	Inspection
IR	Interim Repairs
IR	Infra-Red
KKS	"Kraftwerk-Kennzeichen-System" = Identification System for Power Stations
LV	Low Voltage
MGO	Mini General Overhaul
OEM	Original Equipment Manufacturer
OPS	Operating Department
P&T	Performance and Testing Department
PCLF	Planned Capability Loss Factor
PCM	Process Control Manual

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Abbreviation	Description
PF	Pulverized Fuel
QC	Quality Control
QCP	Quality Control Plan
RBO	Reliability Basis Optimization
SAP	Systems Application Processes
SOW	Scope of Work
UCF	Unit Capability Factor
UCLF	Unplanned Capability Loss Factor
URS	User Requirement Specification

2.5 ROLES AND RESPONSIBILITIES

ESKOM has the responsibility to supply electricity to match the country's economic growth demands. To meet this demand Eskom's power stations must maintain continuous supply for 365 days a year; or assure high availability of all systems and plants in all power stations.

In order to ensure the long term health and safety of the plant, identified critical activities must be performed during plant outages. These outages are managed using project management principles.

Department/ Person	Roles and Responsibilities
Engineering Group Manager	<ul style="list-style-type: none"> Holds the responsibility to support and ensure the document complies with the required standards.
Boiler Engineering Manager	<ul style="list-style-type: none"> responsible for managing the process from end-to-end
Outage Management	<ul style="list-style-type: none"> Responsible for the co-ordination/interfacing of the execution of the Outage Scope of Work activities. Responsible for the planning and scheduling of all outages. Ensures that the required planning is done to arrange for the required scaffolding, cladding and lagging works. Ensures that the required spares and material required for the outage is well planned and arranged to be in time for the works. Ensures that the required labour, to execute the work, is well planned and arranged to be in time for the works. Ensures that the QC Official and System Engineer are supplied with the draft inspection report immediately on completion of inspections on a progressive basis. Ensures that any deviation from the Scope of Work shall be approved by System Engineer only.
Maintenance Management	<ul style="list-style-type: none"> Responsible for the execution of the Outage Scope of Work activities. Ensures that a QC plan is drafted and approved by System Engineer when contract is put in place or at least prior to outage. Ensures that the maintenance orders are loaded, notification created and history loaded to SAP.

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Department/ Person	Roles and Responsibilities
	<ul style="list-style-type: none">Ensures the registration and filing of inspection findings report with Documentation Centre.QC Official does progressive inspections on work.Does final inspections and sign off QCP's.
OPS	<ul style="list-style-type: none">Provides the required support to ensure Plant Safety Regulations are complied with.Provides the required commissioning assistance.
P&T	<ul style="list-style-type: none">Performs the required inspections to ensure that primary measurement devices used for process testing are in order.
Boiler Engineer	<ul style="list-style-type: none">Draft and supply Scope of work to Outage Management.Approve and sign on QCP's.Approve changes in the scope during outages if required.

2.6 PROCESS FOR MONITORING

The Outage Scope of Work shall be updated every three yearly or after the outages has been completed to be used as the reference document for Production Planning, Outage Budgeting, Life of Plant Plan and Long Term Financial Planning.

The execution of this SOW shall be monitored according to the intervention points stipulated in the QCP.

2.7 RELATED AND SUPPORTING DOCUMENTS

Medupi Power Station Outage Philosophy 240-92360717.

3. OUTAGE SCOPE OF WORK

3.1 SCOPE OF WORK REQUIREMENTS

3.1.1 Scope of Work Input Requirements and Conditions

Engineering to source Outage Scope of Work requirements from the following:

- OEM manuals.
- Previous outages data packages.
- Life of plant plan.
- Technical plan.
- Occurrence management.
- History of component/equipment failure.

The above mentioned information is required to determine the Outage Scope of Work for the Business Unit. Routine maintenance activities can be done during the planned outages as an opportunity as long as the work does not impact on the outage critical path and can be done in a planned time frame.

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Scope changes outside the Outage Philosophy must be presented to and approved by the Technical Forum and the Outage Review Committee.

3.1.2 Scope of Work Output Requirements and Conditions

The Outage Scope of Work provides the basis of Outage preparation schedule, and enables the following:

- Compile budget
- Update / create master task list
- Develop outage program and QCP's
- Order long lead spares (Create PR's on SAP)

3.1.3 Contract Roles and Responsibilities

1. The Employer is responsible for Total Fluid Management.
2. The Employer and Contractor in this SOW is committed towards the following;
 - ✓ Retention of critical skills
 - ✓ Continuous cost reduction
 - ✓ Health & Environment Safety
 - ✓ Transfer of operational experience and skills
3. The Contractor shall compile improvement programmes to enhance plant performance and achieve cost reductions and the Employer will approve such programmes.
4. The Contractor shall be responsible for all mechanical and C&I maintenance as per Employer's instructions, processes and systems.
5. The contractor shall be responsible for calibration of plant C&I equipment and to provide calibration certificates after as and when required.
6. The employer shall be responsible for inspection, replacement and maintenance of all DCS equipment.
7. The contractor shall be responsible to assist in execution of any approved modification work.
8. The Employer (C&I Maintenance), will be responsible for sending out old flow meters to E&H or appointed 3rd party for calibration verification as specified in the Maintenance Strategies (see section 2.2.2) during outage.
9. The Contractor shall employ a competent person who is accredited and responsible to perform all statutory plant tests in regards to this SOW.
10. The Contractor shall be responsible for all equipment alignment requirements within this scope of work.
11. The Contractor is responsible for procuring and managing special tools associated with Fuel Oil & LPG and Burner System maintenance such as hydraulic jacks and other special tools.

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12. The Contractor shall be responsible for the inspection, repair and replacement of all structural and support steel work in this scope of work including but not limited to;
 - a. Walkways
 - b. Grating
 - c. Handrails
 - d. Cat ladders
 - e. Hangers
 - f. Supports etc.
13. The Contractor shall make use of local black economic empowerment through the use of black business. The Contractor during the duration of the contract shall train persons from the local community in relation to the works; such proof shall be given to the Employer for verification and acceptance.
14. Performance is measured by the Employer against those areas which contribute to the Employer's business and the Contractor shall be compensated accordingly. (e.g. Reliability, Availability and Safety).
15. Areas of measurement include the Employer's key business indicators and will be redefined from time to time.
16. The following complementary services to improve Plant and labour performance can be defined as follows;
 - a. Project management
 - b. Value engineering
 - c. Procedure and documentation writing
 - d. Design services
 - e. Spares management
 - f. Technical advice
 - g. Operational and production process review
 - h. Asset management in accordance with PAS55
 - i. Component failure analysis reporting
17. The Employer may request the Contractor to ensure that an accurate description of spare parts is maintained in the Employer's stores and the Contractor informs the Employer as to any recommended changes.
18. The Contractor is to ensure that any service rendered does not interfere with the Employer's scheduled work and should align himself with the Employer's work control management process.
19. Should the Employer become aware of any changes to the activity schedule (programme of notifications), the Employer may issue the Contractor with a revised programme.

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20. The contract entered into with the Contractor is non-exclusive and work against this contract can only be performed upon receipt of a Task Order.
21. All statutory tests or inspections done by the Contractor shall be reviewed and accepted by the Employer.
22. The Contractor shall be responsible for statutory inspections/tests as defined by the Employer and supply the Employer with proof of such tests.
23. All works will be subject to anytime inspection from the Employer.
24. Please note that equipment will only form part of the works once the respective area has been commissioned and handed over to Generation. The Contractor shall take cognisance of the fact that the contract start date can deviate.
25. The Contractor maintains an all year round agreed base crew at Medupi Power Station which is supervised by the Contractor with any changes to the crew being negotiated and agreed upon with the Employer.
26. This contract is for outage SOW.
27. Spillage is viewed to be very important for plant housekeeping as well as Environmental Management and any spillage caused as a result of the Contractor shall be cleaned by the Contractor.
28. The Contractor shall perform leak checks on all responsible plant areas and inform the Employer's representative accordingly. Defects must be raised on the system to address any plant deviations.
29. The Contractor shall ensure the integrity of plant labelling and that deficiency with regards to KKS labelling is reported immediately.
30. The Contractor must ensure that they have responsible persons (in terms of PSR and ORHVS) for any work performed on plant. This requires individuals to successfully complete a written and oral examination for the relevant regulation based on the Plant Safety Regulations and Operating Regulations for High Voltage Systems.
31. All technically qualified (above semi-skilled) personnel will be trained and authorised (in terms of PSR and ORHVS) within 3 months of the contract award date. Training will be supplied by the Employer.
32. The Contractor must ensure that all personnel successfully complete a written examination for the relevant regulation based on the Fossil Fuel Firing Regulations (FFFR). Training will be provided by the Employer.
33. Before any work starts on site the Contractor is responsible to submit their Safety File to the Employer for review and acceptance.

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34. The Contractor is also responsible for their employees annual medical checks which must be up to date and also kept in the Safety File. Site Induction must be done before any work is done by any Contractor on site.
35. The contractor shall ensure that all safety valves are sealed and that nameplates are fitted to all pressure equipment.
36. **Note:** The Contractor shall be responsible for auxiliary cooling downstream from the last isolating valve on the inlet to the coolers and up-stream to the first isolating valve on the outlet of the coolers; this includes all lubrication, hydraulic and gear oil coolers.

3.1.4 Continuous Improvement

- ✓ The Contractor shall implement a program of continuous improvement to optimise Plant performance and reduce system and equipment failures.
- ✓ The Contractor shall participate in improvement programs as stipulated by the employer.

3.1.5 Management and Reporting

- a. The Contractor shall participate in improvement programs as stipulated by the employer.
- b. The type of reports, level of detail and frequency of reporting will be mutually agreed by the Employer and the Contractor during the contract negotiation phase of this agreement. These may change from time to time on request by the Employer.
- c. The Contractor to be represented at all outage related meetings which may be daily, weekly or monthly.
- d. The Contractor to be represented at all Employer safety meetings.
- e. The Contractor to be represented at any ad-hoc meetings that may arise in order to address any production or safety related matters.
- f. Liaison meetings shall be held with the Employer's Representative or his/her delegate on a monthly basis to discuss any technical details, or concerns.

3.1.6 Quality and Documentation Control

- a. The Contractor shall ensure that any witness, hold and inspection points are strictly adhered to.
- b. The Contractor to ensure that all measuring and test equipment are calibrated at all times & proof thereof must be readily available.
- c. All Quality References and Standards as stipulated in this document will be adhered to.
- d. Work will only be conducted with an Employer approved Quality Management Programme.
- e. The Contractor shall utilise the Employer's quality documentation management system and processes.

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- f. Supply a well-qualified QC personnel

3.1.7 Project Implementation

The Contractor shall supply a project implementation plan including at least the following;

- ✓ Site establishment
- ✓ Manpower plan
- ✓ Organogram
- ✓ Skills required and associated cost per skill (e.g. artisan, site manager, etc.) as per Appendices A.1 – A.5.

3.1.8 Manpower Requirements

1. The successful Contractor shall utilise/provide skilled and suitably qualified staff with current experience in the following but not limited disciplines;
 - a. Working knowledge of SAP R/3 system
 - b. Occupational Health and Safety Act 85 of 1993
 - c. NEC contract management
 - d. Quality Management Control and Assurance procedures
 - e. Plant Safety regulation authorisation
 - f. Spares optimisation
 - g. Procedure writing
 - h. BOM compilation
2. Staff must meet minimum requirements of Eskom job descriptions, with additional requirements specified.
3. All staff brought onto site in connection with this work scope should be able to fluently speak, understand and write in English.
4. Proof of qualification is to be supplied on request by the Employer.
5. The Contractor ensures that all staff being brought onto Medupi site has a valid fitness certificate based on the specified plant man-job specification.
6. The Contractor shall employ in and about the execution of the works only such persons that are careful, competent and efficient in their specific trades and callings and the Employer shall be at liberty to object to and require the Contractor to remove from the works forthwith any person employed by the Contractor in or about the execution of the works who, in the opinion of the Employer, misconducts himself or is incompetent or negligent in the proper performance of his/her duties and such person shall not again be employed for the works without the written permission of the Employer.

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7. Provide daily supervision of all related plant through trained and competent personnel to ensure that inspections & work activities are conducted daily.
8. Ensures proper behaviour of personnel under his/her supervision as per the Medupi culture.
9. Ensures training of all personnel under his/her supervision. The training required will include but not limited to Eskom safety training requirements, related plant training and Medupi culture.
10. Ensures high morale of staff and competency.

3.1.9 Re-commissioning

- ✓ All Plant equipment maintained shall be re-qualified as per site specific procedure (237-0081) after any maintenance intervention.
- ✓ The Contractor shall be responsible or held liable for any defects arising from maintenance/operational faults three months after an intervention, provided that the equipment has been placed into service.

3.1.10 Contractor's Management, Meetings and Key People

1. Before work starts on site, an inaugural meeting is held with the Contractor and the Employer, to explain in detail all requirements of the Site Regulations.
2. The Contractor is issued with a file of current Site Regulations on arrival. The file remains the property of the Employer and the Contractor is responsible for its maintenance and updating to include new or revised regulations as issued by the Employer.
3. The Contractor must ensure that all personnel operating mobile equipment and vehicles are authorised, this includes but not limited to;
 - ✓ Forklifts
 - ✓ Mobile cranes
 - ✓ Cherry Pickers
 - ✓ Sky Jacks
4. The Contractor shall be responsible for the regular inspections and daily equipment checks of the mobile equipment and vehicles including record keeping.
5. The Contractor must ensure that all personnel performing work on the plant are authorised, this includes but not limited to;
 - ✓ Confine space locations
 - ✓ Working at heights
 - ✓ Heat stress areas
 - ✓ Scaffolding
 - ✓ Hazardous substances

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3.2 METHODOLOGY TO REDUCE OUTAGE DURATIONS

- The Critical Path and Near Critical Path activities will be planned on a 24 hours and 7 days a week basis.
- The principle of Buffer Management will be applied to protect the Critical Path, using CCPM.
- Additional Supervision and Quality Control will be utilised in order to achieve the objective of “the work should be done right the first time”.
- The Outage scope will go through a series of challenges and approval sessions at the RBO Technical Forum, Outage and Steering Committee. At these sessions all scope changes must be motivated on merit. The scope freeze will be 6 months before the Outage in line with the Outage PCMs.
- After the scope freeze date no additional work will be considered unless the variation from Plan Process has been followed and the variation approved by the approval authority as per the scope variation form. This will be applicable to both maintenance activities and Technical Plan Projects being done during the Outage.

3.3 PLANTS AREA

3.3.1 Fuel Oil and LPG Plant

Plant Area	Boundaries of Plant Area
Fuel Oil and LPG Plant	The Fuel Oil and LPG Plant is defined as the plant and equipment interfacing with fuel oil, that exists between the following points; <ul style="list-style-type: none">- fuel oil supply and return to the units (piping and equipment)- the inlet of oil burners

Applicable S.O.W

1. Inspection, testing, maintenance and replacement of the following;
 - a. Flexible hoses and couplings
 - b. Filters/strainers
 - c. Piping including flanges gaskets and bolting
 - d. Inspection manholes
 - e. Supports and hangers
 - f. Expansion bellows
 - g. Related compressed air distribution system (If applicable)
 - h. Purification systems
2. Stoke checking of motorised and pneumatic actuators
3. Cleaning of pressure and differential pressure (DP) measurement taping points to remove blockages or settled particles

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Costing Matrix

1. Refer to Appendix A.1 for cost breakdown structure.

3.3.2 Burners

Plant Area	Boundaries of Plant Area
Burner	<p>The plant and equipment interfacing with PF, LPG, fuel oil, air and steam that exists between the following points;</p> <ul style="list-style-type: none">- inlet of PF to the burner up to outlet of PF at burner nozzle, and- inlet of fuel oil from the first isolating valve closest to the burner to the outlet of the oil lance, and- inlet of LPG from the first isolating valve closest to the burner to the outlet of the igniter, and- Inlet of steam from the first isolating valve closest to the burner to the outlet of the burner nozzle. <p>This implies the following plant and equipment;</p> <p>PF Burner</p> <ul style="list-style-type: none">- casing- associated equipment with oil lance, ignitor & propane gas (including atomized steam system)- swirl vanes

Applicable S.O.W

1. Inspection, testing, maintenance and replacement of the following;
 - a. PF (primary air) tube including impact elbow and integrated fuel nozzle
 - b. Maintenance on the fuel oil lance and LPG ignitor
 - c. Adjustable swirl blades (Primary, Secondary and tertiary)
 - d. Fuel nozzle
 - e. Stabiliser ring
 - f. Related compressed air distribution system (If applicable)
2. Inspection, testing, calibration, maintenance and replacement of the following C&I equipment;
 - a. Temperature, pressure, flow and level measuring equipment
 - b. LPG igniter
 - c. Limit switches
 - d. UV and IR flame scanners and optic lenses

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- e. C&I Cabling
- f. Power supplies
- g. Relays and fuses
- h. AUMA actuator matics
3. Maintenance of the ignitor and simulation of flame on feedback
4. Stripping, cleaning, tightening and testing of oil burner ignitors during associated mill services and replacing any damaged ceramics.
5. Assist in putting oil burners in service
6. Stoke checking of motorised and pneumatic actuators

Costing Matrix

Refer to Appendix A.1- A.3 for cost breakdown structure.

3.4 SPARES AND MATERIALS

A Bill of Material Philosophy to support the Outage Scope of Work and Outage duration reduction will be:

- A Bill of Material for each Outage will be given to Optimisation 12 months prior to the Outage.
- The Bill of Material will indicate stock requirements for the forthcoming Outage.
- The spares and Materials will be procured in the normal manner as per stations procurement procedures and where necessary the contractor may be asked to source spares on behalf of Eskom using the samples during outages.

3.5 FUEL OIL, LPG AND BURNERS OUTAGE REQUIREMENTS

Expected operating period between major overhaul of equipment is as reflected by the table below:

Table 1: Outage Intervals

Symbol	Outage type	Interval Years	Interval Hours	Duration (days)	Outage main activities
□	GO	12	100 000	70	HP, IP and LP cylinder overhaul
◇	IN	1,5	12 500	14	Boiler and Draught Group inspection
△	IR	3	25 000	35	Boiler and Turbine Auxiliaries inspection and repairs

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○	MGO	6	50 000	42	LP cylinder overhaul and refurbishment HP and LP regenerative heaters CEP overhauls, inspections, and repair. Boiler statutory inspections Generator stator and rotor inspections
---	-----	---	--------	----	---

Assumptions used to derive the philosophy are as follows:

- The Outage durations will be from Breaker Open to Breaker Close.
- It is envisaged that any Guarantee Inspections (GI) as a result of contractor (OEM) requirements will be done during the scheduled Outages
- Based on the current operational experience within the Eskom's fleet, it has been envisaged that a 12 500 hours boiler tube survey for the inspections and minor repairs on the boiler pressure parts and ducting is required due to the anticipated higher erosion rates

The activities to be done on the milling plant, during the different outages, are listed next (see appendix A for details). NOTE: Only mill services due shall be executed, any deviation shall be approved by System Engineer.

3.5.1 Boiler Tube Survey Inspection

- Visual inspection of field instrumentation for damage and looseness
- Functional testing of limit switches
- Visual inspection of PF pipes for damage and leaks
- Visual inspection for corrosion, erosion and mechanical damage of the DS burners
- Packing adjustment or replacement on PF isolating gates and orifice
- Outstanding SAP notification to be repaired

3.5.2 Interim Repair

- All activities done on IN
- Termination tightness checks of local control panels
- Calibration of field instrumentation
- Internal inspection of PF pipes for wear
- Internal inspection and dimensional stability checks of the DS burners
- Replacement of damaged flame stabilizers
- Outstanding SAP notification to be repaired

3.5.3 Mini General Overhaul

- All activities done on IN and IR

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- Actuator overhaul
- Hanger support survey (PF pipes)
- Thickness Measurements of PF pipes
- Internal inspection of PF pipe orifices
- Outstanding SAP notification to be repaired

3.5.4 General Overhaul

- All activities done on IN, IR and MGO
- Outstanding SAP notification to be repaired

3.6 SITE FACILITIES AND SERVICES PROVIDED BY CONTRACTOR

3.6.1 Service Cost

- ✓ The Contractor's performance evaluation shall be done during monthly meetings between the Contractor and the Employer.
- ✓ Quoted prices should be in line with the attached costing sheet, Appendices A.1 – A.3.

3.6.2 Communication and Correspondence

All correspondence includes;

- a. Medupi Power Station
- b. Employer's Contract number
- c. Contract description
- d. Correspondence subject matter
- e. Employer's name and contact details
- f. Contractor contact details
- g. Date

Where appropriate the correspondence includes the Employer's reference and is delivered as a single package.

All communications from the Contractor are numbered sequentially with a prefix as advised by the Employer. The Employer responds in like manner. The prefix and numbering system is decided upon at the Inaugural meeting.

3.7 TENDER REQUIREMENTS

- a. A proposal is to be submitted by the tenderers for the above-mentioned scope of work, including the referenced in 32-726 and 237-0012, Rev 4.
- b. Hereafter a contract shall be negotiated with the successful Contractor.

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c. The appointment of successful Contractor is at Eskom's (The Employer) sole discretion taking into account the factors which Eskom considers relevant.

d. The tender prices shall be completed as per attached pricing structure, Appendices A.1 – A.5.

The non-plant related pricing structure (Appendix A.5) is to be completed for staff and overheads that are not directly related to plant maintenance, operations and services.

4. ACCEPTANCE

This document has been seen and accepted by:

Name	Designation
Joshua Lekoloane	Boiler Maintenance Manager
Jan Victor	Outage Execution Manager
James Mashao	Reliability Engineer
Prince Twala	Outage Coordinator
Shandukani Manana	System Engineer (EIT)
Benji Rahlogo	Chief Technologist Engineering
Bernard Matanda	Senior Advisor Engineering
Kenneth Ndumo	System Engineer

5. REVISIONS

Date	Rev.	Compiler	Remarks
April 2021	1	P Mamathoni	First issue

6. DEVELOPMENT TEAM

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

- Phaṭhutshedzo Mamaṭhoni
- Bennie Galane
- Shandukani Maṭhena
- Kenneth Ndumo

7. ACKNOWLEDGEMENTS

None.

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Cost Break-down Structure

APPENDIX A. 1 Fuel Oil and LPG Burner Plant Price List Template

Costing breakdown requirements for attached Scope of Work		FUEL OIL AND LPG													
Period: Date from: _____ Date to: _____ <i>(Period is to a maximum of 12 months. If period of scope is longer than 12 months additional(s) costing matrix needs to be completed)</i>															
		Hourly Rate	Working Hrs	No of people	Overtime Hourly rate	Standby Rate	Spares Quantity	Unit of Measure	Price of item	Handling fee	Usage (km or hrs) Rate	Number of hours or km's	Rate per km	Distance per period	Cost for Period
				Mon - Sat	Sun/ Public Holidays										
Manpower for Scope of Work															
Labour Mechanical - (please specify per skill level)															
Labour Mechanical - (please specify per skill level)															
Labour Mechanical - (please specify per skill level)															
Labour Mechanical - (please specify per skill level)															
Labour Mechanical - (please specify per skill level)															
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Labour Mechanical - (please specify per skill level)															
Labour Mechanical - (please specify per skill level)															
Labour Mechanical - (please specify per skill level)															
Labour Mechanical - (please specify per skill level)															
Spares requirement															
Spares item - (please specify per item - description & part no.)															
Spares item - (please specify per item - description & part no.)															
Spares item - (please specify per item - description & part no.)															
Spares item - (please specify per item - description & part no.)															
Spares item - (please specify per item - description & part no.)															
Equipment usage as required for scope of work															
Equipment - (please specify per item - description & asset no.)															
Equipment - (please specify per item - description & asset no.)															
Equipment - (please specify per item - description & asset no.)															
Equipment - (please specify per item - description & asset no.)															
Equipment - (please specify per item - description & asset no.)															
Overheads															
Manpower															
Labour - (please specify per skill level)															
Labour - (please specify per skill level)															
Labour - (please specify per skill level)															
Labour - (please specify per skill level)															
Labour - (please specify per skill level)															
Travelling															
Home work home															
Call-outs or overtime															
Other - (please specify)															
Miscellaneous															
Telephone															
Stationary & Printing															
Training															
SHEQ compliance															
Other - (please specify)															
Other - (please specify)															
Other - (please specify)															
Other - (please specify)															
Other - (please specify)															
PROFIT MARGIN:															

2.

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APPENDIX A. 2 PF Burner Plant Price List Template

[illegible]

3.

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APPENDIX A. 4 BOILER HOUSE COMBUSTION FRONT & REAR WALL

Activity Ref No	Function Loc (KKS)	Functional LOC Description	# of Items	Scope/Ac tivity	Task		SAP Task Nr	Spare Req	Drawing No	Outage Type								
					Activity Description	Activity Loc.				BTS	IR	BTS	MGO	BTS	IR	BTS	GO	
F10	6-1 0HHE11-16, 21-26, 31-36, 41-46, 51-56 BR010	MILL 10-50 PF PIPING	30	Inspection	Visual inspection of PF pipes			N				x		x		x		x
F20	6-1 0HHE11-16, 21-26, 31-36, 41-46, 51-56 BR010	MILL 10-50 PF PIPING (CERAMIC TILING)	30	Inspection	Internal inspection of PF pipe bends			Y				x		x		x		x
F30	6-1 0HHE11-16, 21-26, 31-36, 41-46, 51-56 BR010	MILL 10-50 PF PIPING	30	Test	Hanger support survey			N						x				x
F40	6-1 0HHE11-16, 21-26, 31-36, 41-46, 51-56 BR010	MILL 10-50 PF PIPING EXPANSION JOINT	30	Inspection	Visual inspection of expansion joints			Y			x	x	x	x	x	x	x	x
F50	6-1 0HHE11-16, 21-26, 31-36, 41-46, 51-56 CQ401	PF BURNER PF MEAS	30	Inspection	Inspection of sampling point for blockages & coal build up			N				x		x		x		x
F60	6-1 0HHE11-16, 21-26, 31-36, 41-46, 51-56 CT001	PF BURNER CLASSIFIER TEMP	30	Calibrate	Calibration of temperature transmitter			Y				x		x		x		x
F70	6-1 0HHE11-16, 21-26, 31-36, 41-46, 51-56 CT001	PF BURNER CLASSIFIER TEMP	30	Inspection	Inspection of temperature probe cables & fittings			N			x	x	x	x	x	x	x	x
F80	6-1 0HHE11-16, 21-26, 31-36, 41-46, 51-56 AA101	PF BURNER PA COOLING DAMPER	30	Inspection	Internal inspection of 3 way valve			Y				x		x		x		x

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Activity Ref No	Function Loc (KKS)	Functional LOC Description	# of Items	Scope/Activity	Task		SAP Task Nr	Spare Req	Drawing No	Outage Type							
					Activity Description	Activity Loc.				BTS	IR	BTS	MGO	BTS	IR	BTS	GO
F90	6-1 0HHE11-16, 21-26, 31-36, 41-46, 51-56 AA101	PF BURNER PA COOLING DAMPER	30	Refurbish	Packing adjustment/replacement of 3 way valve			Y		x	x	x	x	x	x	x	x
F100	6-1 0HHE11-16, 21-26, 31-36, 41-46, 51-56 AA101	PF BURNER PA COOLING DAMPER	30	Test	Stroke test			N		x	x	x	x	x	x	x	x
F110	6-1 0HHE11-16, 21-26, 31-36, 41-46, 51-56 AA101	PF BURNER PA COOLING DAMPER	30	Refurbish	Overhaul of electric actuator			Y					x				x
F120	6-1 0HHE11-16, 21-26, 31-36, 41-46, 51-56 AA101	PF BURNER PA COOLING DAMPER	30	Refurbish	Gearbox overhaul			Y					x				x
F130	6-1 0HHE11-16, 21-26, 31-36, 41-46, 51-56 AA501	PF BURNER MILL OUT IV	30	Inspection	Internal inspection of gate valve			Y					x				x
F140	6-1 0HHE11-16, 21-26, 31-36, 41-46, 51-56 AA501	PF BURNER MILL OUT IV	30	Refurbish	Packing adjustment/replacement of gate valve			Y		x	x	x	x	x	x	x	x
F150	6-1 0HHE11-16, 21-26, 31-36, 41-46, 51-56 BP501	PF BURNER MILL OUT ORIFICE	30	Inspection	Internal inspection of orifice valve			N			x		x		x		x
F160	6-1 0HHE11-16, 21-26, 31-36, 41-46, 51-56 BP501	PF BURNER MILL OUT ORIFICE	30	Refurbish	Packing adjustment/replacement of orifice valve			Y		x	x	x	x	x	x	x	x
F170	6-1 0HHE11-16, 21-26, 31-36, 41-46, 51-56 CG301	PF BURNER PA COOLING DAMPER OPEN	30	Test	Limit switch functional testing			Y		x	x	x	x	x	x	x	x

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Activity Ref No	Function Loc (KKS)	Functional LOC Description	# of Items	Scope/Activity	Task		SAP Task Nr	Spare Req	Drawing No	Outage Type								
					Activity Description	Activity Loc.				BTS	IR	BTS	MGO	BTS	IR	BTS	GO	
B10	6-1 0HHA11-16, 21-26, 31-36, 41-46, 51-56 AV001	BURNER	30	Inspection	Internal inspection of fuel nozzle			Y				x		x		x		x
B20	6-1 0HHA11-16, 21-26, 31-36, 41-46, 51-56 AV001	BURNER (WEAR PARTS: Baffle plate, Impact table, Coal dust piping)	30	Inspection	Visual Inspection			Y				x		x		x		x
B30	6-1 0HHA11-16, 21-26, 31-36, 41-46, 51-56 AV001	BURNER (nozzle)	30	Inspection	Dimensional stability checks			Y				x		x		x		x
B40	6-1 0HHA11-16, 21-26, 31-36, 41-46, 51-56 AV001	BURNER	30	Inspection	External inspection of burner wear parts			N			x	x	x	x	x	x	x	x
B50	6-1 0HHA11-16, 21-26, 31-36, 41-46, 51-56 AV001	BURNER	30	Inspection	Inspection for tightness			N						x				x
B60	6-1 0HHA11-16, 21-26, 31-36, 41-46, 51-56 CT001	PF BURNER PF IN TEMP	30	Calibrate	Calibration of temperature transmitter			Y				x		x		x		x
B70	6-1 0HHA11-16, 21-26, 31-36, 41-46, 51-56 CT001	PF BURNER PF IN TEMP	30	Inspection	Inspection of temperature probe cables & fittings			N			x	x	x	x	x	x	x	x
B80	6-1 0HHA11-16, 21-26, 31-36, 41-46, 51-56 CR001	U6-U1 OIL BURNER 11-16, 21-26, 31-36, 41-46, 51-56 IR FLAME DETECTOR	30	Test	Inspection & testing of IR flame detector			Y				x		x		x		x

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