Eskom	Specification	Kusile Power Station

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1. Introduction

Kusile Power station has taken a decision to outsource metallurgical replicas on an as and when required basis to a suitability qualified and well-established contractor.

This document describes the details 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

2.1.1 Purpose

- The purpose of this document is to define the specified Metallurgical Replication for Outage scope of work activity requirements for Kusile Power Station.
- The station is expected to perform at 85% EAF, 10% PCLF and 5% UCLF, and the specified sandblasting activities and management strategy efforts must support this requirement.
- It is therefore imperative that the successful and suitably qualified SP aligns his/her organisation fully to these specified scope activities and processes laid down in this document.

2.1.2 Applicability

This document shall apply throughout Eskom Kusile Power Station.

2.1.3 Effective date

Document is effective upon authorization.

2.2 Normative/Informative References

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

2.2.1 Normative

№	REF NO	DOCUMENT TITLE
1	240-156160929	Kusile Power Station Non-Destructive Testing (NDT) for Maintenance and Outage SOW “as and when required”
2	240-83539994	Standard for Non-Destructive Testing (NDT) on Eskom plant
3	240-83540088	Requirements for standard NDT on Eskom plant standard
4	SANS 347	Categorization and conformity assessment criteria for all Pressure equipment
5.	240-56239129	High pressure pipework for Fossil Fuel Fired Power Stations

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№	REF NO	DOCUMENT TITLE
6.	240-56355225	Welding of high-pressure temperature tube and pipework standard
7.	240-56241933	Control of plant construction repair and maintenance welding activities standard
8.	240-77196678	Heat treatment of welded components standard
9.	240-56247788	Weld defects classification and reporting standard
10.	ISO 9001:2015	ISO 9001 Quality Management Systems
11.		OHS ACT Occupational Health and Safety Act, 85 of 1993
12.	240-81951984	Kusile Outage Philosophy
13.	36 – 732 Rev 0	Radiographic Acceptance Levels
14.	240-134567773	Kusile Power Station Integrated Risk Management Work Instruction
15.	NMP47-7 Rev 0	Application of KKS Plant Coding

2.2.2 Informative

1. 240 -111098236 Kusile Power Station Issue Management Work Instruction
2. OHSACT Corrective and Preventative Action Management Work Instruction
3. Occupational and safety Act 1993 (No 85 of 1993) OHS act regulation and code

2.3 Definitions

NDT Service Provider: non-destructive testing service provider contracted for supplying NDT services to Eskom, Kusile Power Station.

Approved Procedure: A procedure that has been reviewed and accepted by the Eskom Metallurgist against the minimum requirements of the relevant applicable code and the requirements of this standard

Certification: The procedure used by the certification body to confirm that the qualification requirements for a method, level and/or sector have been fulfilled, leading to the issuing of a certificate [SANS ISO 9712] or equivalent.

Employer: Eskom, or Eskom Kusile Power Station.

Non-Destructive Testing: Broadly; the methods for which NDT certification can be gained in accordance with the requirements of ISO 9712 or (or equivalent).

Metallurgist: The person who authorises metallurgical replica results and issues a formal report to the appointed Metallurgical Replicas service provider.

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2.4 Abbreviations

Abbreviation	Description
NDT	Non-Destructive Testing
FAC	Flow Accelerated Corrosion
SOW:	Scope of Work
UT	Ultrasonic Testing
RT	Radiographic Testing
MT	Magnetic Testing
PT	Penetrant Testing
RPO	Radiation Protection Officer
NDE	Non-Destructive Examinations
RP	Responsible person
AP	Authorised Person
IR	Interim Repairs
ISO	International Standardisation Organisation
NDT	Non-Destructive Testing
PCLF	Planned Capability Loss Factor
PCM	Process Control Manual
QA	Quality assurance
SAP	System Applications Products
SOW	Scope of Work
EAF	Energy Availability Factor
UCLF	Unplanned Capability Loss Factor
AIA	Approved Inspection Authority
SP	Service Provider

2.5 Roles and Responsibilities

Note: Further roles and responsibilities can be obtained from the NEC3 TSC

2.5.1 The Employer

The responsibilities of the Employer include the following:

a) Inform the Replicas SP if there is a need for metallurgical replication to be done in the plant.

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b) Provide information of operations prior to any metallurgical replication activity.

c) Make all necessary arrangements for the metallurgical replication SP to access site and perform the work required.

d) Send a representative to the metallurgical replication SP premises/workshop if there is any inspection, assessment or witnessing required.

e) Employer shall ensure that SP intended to be contracted have been assessed for compliance against the requirements of 240-83539994 and the relevant minimum EN ISO code requirements for each method intended to be used on site.

2.5.2 The SP Responsibility

The responsibilities of the metallurgical replication SP include the following:

1) Comply with the Employer's Environmental, Health and Safety standards, policies and procedures.

2) Metallurgist must conduct pre-analysis of replicas and ensure the replicas are of good Quality.

3) The metallurgical replication SP will send the replicas to Eskom Research Testing and Development site. The contractor will submit all the inspection reports to the Employer once all tests are completed.

4) The metallurgical replication SP must at all times comply with Standard for Non-Destructive Testing-240-83539994, any deviations to the Standard will lead to the withdrawal of Eskom approval.

5) Attend and conduct site meetings as per client requirements.

6) The SP shall produce a final report within 30 working days after the date of completion of the of the works or any date agreed on as per Task Order.

7) SP's vehicles to comply with Eskom Vehicle Standards and Procedures.

8) SP will provide on-site representation on a 24 hour basis, seven days a week. Shift times: 07h00 to 19h00, 19h00 to 07h00 or whichever times that will be agreed between two parties.

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9) Be in a position to make use of Primavera or any project software agreed with the Employer for project tracking and reporting purposes.

10) Provide all tools and equipment required for the execution of the work

11) Transporting metallurgical replicas to and from RT&D

2.6 Process for Monitoring

Process will be agreed by both parties per purchase order.

2.7 Related/Supporting Documents

N/A

3. Works information

3.1 Outage Philosophy

The scope of work is applicable to Metallurgical Replication for Outage at Kusile power station as and when required as per scope of work.

The system is also aligned to Kusile Power Station Outage Philosophy depicted as follows and gets reviewed yearly

Due to the PJFF design defect which leads to a reduced lifespan of filter bags, the unit Outage Philosophy will in the interim be driven by PJFF bag replacements which will occur every 12 months requiring a minimum duration of 14 days (breaker open to breaker close). Provision of 1% normal outage PCLF has been made to cater for Opportunity Outages (boiler tube leaks or any emergency repairs that might require plant shutdown).

The temporary Outage Philosophy is as depicted on the diagram below:

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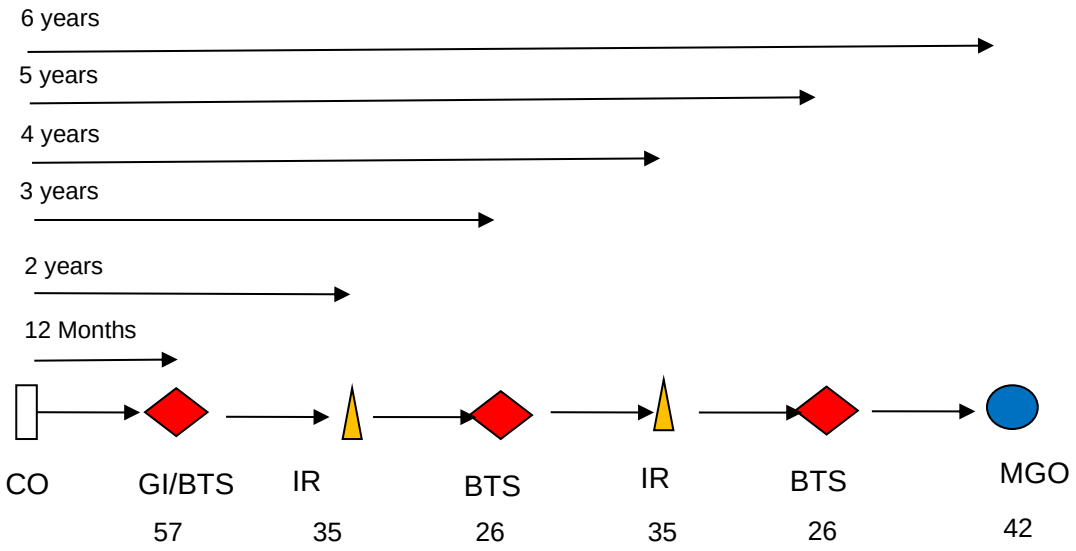

Figure 1: Interim Outage Philosophy (1st 6 Year Cycle)

Symbol	Outage type	Interval Years	Interval Hours	Duration (days)	Main activities
◆	BTS	1	8000	26	Boiler and Draught Group inspection Mill bin inspection PJFFP Bag replacement Absorber, Inlet & Outlet Duct, Emergency Quenching Nozzles, Mist Eliminators, Oxy-Blower and Reaction Tanks - Cleaning, Inspection and Refurbishment
▲	IR	2	24 000	35	Boiler and turbine auxiliaries inspection and repairs PJFFP Bag replacement Absorber, Inlet & Outlet Duct, Emergency Quenching Nozzles, Mist Eliminators, Oxy-Blower and Reaction Tanks - Cleaning, Inspection and Refurbishment
●	MGO	6	48 000	42	LP cylinder and Valves overhaul Boiler statutory inspections Generator stator and rotor inspections PJFFP Bag replacement Absorber, Inlet & Outlet Duct, Emergency Quenching Nozzles, Mist Eliminators, Oxy-Blower and Reaction Tanks - Cleaning, Inspection and Refurbishment

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Table 1: Kusile Outage Philosophy

3.2 Applicable Plant Area

Metallurgical Replication will be conducted on the below plants and any other plant as and when required by the Employer

- Main Steam pipework
- Hot Reheat pipework
- Cold Reheat pipework
- Any other plant area as Kusile Power Station if required

3.2.1 Applicable SOW

The scope of work covered by this contract is provision of "***metallurgical replication***"

Inspection Methods

- Metallurgical replicas

4. Acceptance

This document has been seen and accepted by:

Name	Designation
Siyabonga Mahaye	Middle Manager Outages
France Mabula	Project Coordinator
Ntsiki Hlapisi	Manager Outage Execution
Musa Ngwane	Senior Boiler Engineer
Grace Olukune	Engineering Group Manager

5. Revisions

Date	Rev.	Compiler	Remarks
May 2025	2	S Mthimkhulu	Scope revised for new contract
February 2021	1	PF Mabula	New contract placement

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6. Development Team

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

- France Mabula
- Sibangani Mthimkhulu

7. Acknowledgements

Not Applicable

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