Eskom	MATLA POWER STATION SCOPE OF WORK	Document Identifier	14593	Rev	7
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PLANT AREA: Matla Power Station TITLE: *Acid (Chemical) Cleaning and Pressure Testing for Water boxes*			
REF MET-054211	Reference Rev No 1	MULTIDISCIPLINARY: No	Plant Level: All

COMPILED BY	*Name: Amogelang Magile* *Systems Engineer/End User*	Signature	Date 11/06/2026
APPROVED	*Name: Zain Karodia* *Line Manager*	Signature	Date 11/06/2026
APPROVED	*Name: Lindokuhle Ngobese* *Group Manager*	Signature	Date 11/06/2026
REVIEWED	*Name:* Thabo Matlanyana *Quality Department*	Signature	Date 12.06.2026
REVIEWED	*Name.* Robert Mathiba *Occupational Health and Safety*	Signature	Date 29/06/2026
REVIEWED	*Name:* Mahlatse Themane *Environmental Department*	Signature	Date 12/06/2026
ACCEPTED	*Name:* Enock TShabangu *Outage Manager/Maintenance manager*	Signature	Date
ACCEPTED	*Name:* *AIA*	Signature	Date

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GENERAL

- Data books, reviews, reports, and diagrams/drawings shall be submitted to Engineering after the completion of the work Engineering to forward the data books to Quality Department (Document Control)
- All QCP's to be submitted to Engineering and Quality for approval prior to outage/project or maintenance work commencement.

	SCOPE OF WORK DESCRIPTION / ACTIVITY	PROCEDURE, SPECIFICATION, ENG. REQUIREMENTS / DOCUMENTATION	HOLD POINTS, WITNESS, REPORTS	RESPONSIBLE PARTY
1 1	Occupational Health and Safety	• Health and safety file should be approved by Safety risk management department prior to any work commences on site • All work is to be done in accordance with OHS Act 85 of 1993, Matla plant procedures and Plant Safety Regulations (240-150642762) • Matla power station SHEQ induction must be done before access to site can be granted • The contractor should ensure that all employees have acquired the required competency for the task they are performing • The contractor to ensure compliance to updated legal requirements and other requirements • **BUY QUIET**· All stakeholders are encouraged to purchase or rent quieter machinery, equipment, and tools to reduce worker noise exposure, contribute towards compliance	Eskom to witness	Contractor

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		to OHSA noise exposure limits and ultimately reduce the risk of noise induced hearing loss		
1 2	Environmental Management	• All activities listed in the National Environmental Act 107 of 1998, EIA Regulations as amended, must have environmental **AUTHORISATION** before commencement of work • The contractor shall comply with all applicable legal and other requirements • The polluter pays principle will be applied • The contractor manager shall ensure compliance with Eskom Matla Environmental procedures to ensure the prevention of pollution (refer OMOP 4090 and 4402) • The last payment will be processed based on the status of the last housekeeping check sheet (Annexure C OMOP 4402) of designated area • EMS file based on ISO14001 will be required	Eskom to witness	Contractor
1 3	Quality Management	• The contractor/executioner of work will be responsible for drawing up all QCP documentation and this must be approved by engineering and authorised by the Quality Department before commencing with the work • Contractors/executioner to adhere to QM 58 and OMOP4497 requirements • Number of NCR issued can affect your next tendering process • The QCP shall be signed progressively by the Engineer/Supervisor, Eskom QC Inspector, Contractor QC Inspector and/or AIA	Hold point	Contractor

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		• No procuring of outage items without the approval of scopes by quality • All outage scopes creep and scopes addition should be approved by quality • No contractor should be in the possession of scopes for execution without the scopes approved by quality • The contractor is subjected to quality auditing at any point in time during execution of scope		
1 4	Inputs from other departments			
1 5	Commissioning reference			

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	SCOPE OF WORK DESCRIPTION / ACTIVITY	PROCEDURE, SPECIFICATION, ENG. REQUIREMENTS / DOCUMENTATION	HOLD POINTS, WITNESS, REPORTS	RESPONSIBLE PARTY
1	**Main CW Water-Boxes**	Water box for vertical assembly CR10E4 thrust and journal bearing Passes 5		
	Remove the top and bottom Main CW water-boxes		H	ERI
	Chemical cleaning work will be done off site at the contractor facilities.	The datasheet together with batch certificate of the inhibitor used must be supplied before commencement of chemical cleaning work Care must be required for satisfactory use (stricter limitations on pH, temperature, and/or solvent concentrations).	Submit report	Contractor
	Pressure test both water boxes to determine if there are leakages Repair leaks if found	• Pressure 4 bar, 30 minutes • 2% allowable pressure drop • Calibrated pressure gauge to be used	Submit pressure test certificate and calibration certificate Submit repair reports	Contractor

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	Water boxes are to be treated with a solution containing chemicals These chemicals will be injected, circulated and soaked in the water boxes to enable removal of the build-up scale and impurities	Chemicals to be used Inhibited Hydrochloric Acid @ 5% (Maintain a 3,0% residual) Armohib 28 Inhibitor @ 0,15% Antifoam chemical This solution will be recirculated and soaked in the system for a period of 6 - 8 hours, or until analytical figures have stabilised. A minimum residual free acidity of 3,0% will be maintained by the addition of further chemicals should it become necessary. According to the Eskom Cleaning of Steam Condensers and Heat Exchangers Guideline (Unique Identifier 240-56030530), the maximum temperature of Hydrochloric Acid solution that can be circulated inside Cast Iron is 49°C	Data must be recorded in the contractor's chemical cleaning report Acid % and Iron concentration must be analysed throughout chemical cleaning process. The total scale removed must be recorded	Contractor / Chemical Engineering

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	Water boxes are to be thoroughly flushed with water until all traces of mineral acid have been removed	Conductivity measurements will be done to ensure that all traces of acid have been removed. The final acceptable conductivity measurement must be that off the incoming water supply ±100 µS/cm and must be confirmed by 3 consecutive measurements	Data sheet to be included cleaning report.	Contractor / Chemical Engineering
	Water boxes to be filled and circulated with a solution to pacify the cleaned metal surfaces before final drain to waste	Chemicals to be used 0,6% Citric Acid, 1 % Ammonia, 0,3% Hydrogen Peroxide Passivation of the metals surface must be confirmed with a pH value A final pH of 9 must be achieved and confirmed with 3 consecutive measurements		Contractor / Chemical Engineering
	Pressure test after chemical cleaning must be done.	• Pressure 4 bar, 30 minutes • 2% allowable pressure drop • Calibrated pressure gauge to be used	Submit Pressure test certificate and gauge calibration certificate	Contractor / Turbine Engineering

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	Submit all chemical cleaning and pressure test reports to engineering			Contractor
2.	**Main Turbine Extraction Pump Water-Boxes**	Water box for vertical assembly CD400-600 thrust and journal bearing Passes 5		
	Remove the top and bottom Main CW water-boxes		H	ERI
	Chemical cleaning work will be done off site at the contractor facilities	The datasheet together with batch certificate of the inhibitor used must be supplied before commencement of chemical cleaning work. Care must be required for satisfactory use (stricter limitations on pH, temperature, and/or solvent concentrations)	Submit report	Contractor
	Pressure test both water boxes to determine if there are leakages Repair leaks if found	• Pressure 4 bar, 30 minutes • 2% allowable pressure drop • Calibrated pressure gauge to be used	Submit pressure test certificate and calibration certificate. Submit repair reports	Contractor / Turbine Engineering

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	Water boxes are to be treated with a solution containing chemicals These chemicals will be injected, circulated and soaked in the water boxes to enable removal of the build-up scale and impurities.	Chemicals to be used Inhibited Hydrochloric Acid @ 5% (Maintain a 3,0% residual) Armohib 28 Inhibitor @ 0,15% Antifoam chemical This solution will be recirculated and soaked in the system for a period of 6 - 8 hours, or until analytical figures have stabilised A minimum residual free acidity of 3,0% will be maintained by the addition of further chemicals should it become necessary According to the Eskom Cleaning of Steam Condensers and Heat Exchangers Guideline (Unique Identifier 240-56030530), the maximum temperature of Hydrochloric Acid solution that can be circulated inside Cast Iron is 49°C.	Data must be recorded in the contractor's chemical cleaning report Acid % and Iron concentration must be analysed throughout chemical cleaning process The total scale removed must be recorded	Contractor / Chemical Engineering

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		•		
	Water boxes are to be thoroughly flushed with water until all traces of mineral acid have been removed.	Conductivity measurements will be done to ensure that all traces of acid have been removed. The final acceptable conductivity measurement must be that off the incoming water supply ±100 µS/cm and must be confirmed by 3 consecutive measurements	Data sheet to be included cleaning report	Contractor
	Water boxes to be filled and circulated with a solution to pacify the cleaned metal surfaces before final drain to waste	Chemicals to be used 0,6% Citric Acid, 1 % Ammonia, 0,3% Hydrogen Peroxide Passivation of the metals surface must be confirmed with a pH value A final pH of 9 must be achieved and confirmed with 3 consecutive measurements		Contractor

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	Pressure test after chemical cleaning must be done.	• Pressure 4 bar, 30 minutes • 2% allowable pressure drop • Calibrated pressure gauge to be used	Submit Pressure test certificate and gauge calibration certificate	Contractor
	Submit all chemical cleaning and pressure test reports to engineering	•		Contractor

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BILL OF MATERIAL

	Full description of Material/Spares/Equipment	Specifications of Material/Spares/Equipment	Stock No	Part Number	Required Quantity

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SCOPE COMPILATION REFERENCES				
SOURCE & Ref No	Yes	No	N/A	Comments
Previous outage service reports		X		
Return to service data packages		X		
Maintenance Strategy with Rev number		X		
SAP defects (attach list as appendix)		X		
GHRMS (STEP) reports (Generation Heat Rate Management System)		X		
Online Condition Monitoring		X		
Pre-outage performance test results		X		
Post outage performance test results		X		
GPSS/ Plant Performance data on UCLF incurred		X		
OMS / IIRMS recommendations (Audits Reports)		X		
Risk controls (IRM system)		X		
Previous audits and reviews (e.g. ERAP)		X		
Engineering Change Requests (Projects)		X		
LOPP strategy reports		X		

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URS		X		
Philosophy (Outage)		X		
Condition Monitoring Report		X		
VA/PHD Viewer trends		X		
Corrective Actions	X			
CARAB reports		X		
Statutory Requirements		X		
Grid code requirements		X		
Waivers and Exemptions		X		
Calibration requirements		X		
Previous Outage SOW variations		X		
Post Mortems Actions from previous outages		X		
Pre–Outage plant walks		X		
Risk based inspection (RBI) report		X		
Simulation, TOIs, OON, SI		X		

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COMMENTS

ATTACHMENTS: DRAWINGS, SKETCHES, DIAGRAMS, INSTRUCTIONS, etc	
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