Eskom	**SERVICE AND CALIBRATION OF LABORATORY AND ONLINE INSTRUMENTS FOR PERIOD OF 5 YEARS**	**Doc. no. F/290/007** **Rev.1.0** **Total pages 1 of 2**
Matimba Power Station		**Reference Document: PS/290/003**

Unit:	**1**		**2**		**3**		**4**		**5**		**6**		**O/P**
Outage	**IR**		**GO**				**OTHER**	**X**					
Outage Date	**N/A**												
Function	**Chemical services Process Chemistry**												

System		Date
Chemical services water treatment plant and condensate plant **Vhuthihi Makhwanya**	**Snr Supervisor Chemistry Tech** **Vhuthihi Makhwanya**	2024/08/05

Vhuthihi Makhwanya **Snr Supervisor Chemistry Tech**		2024/05/05
Keikantse Pule **Research Testing and development**		2024/11/04
Tebogo Kubyane **Operating Manager**		2024/11/12

1 Description of the *service*

1.1 Executive overview

Matimba power station produces demineralised Water using ion exchange systems. During the process of electricity production, it is imperative to monitor the chemistry of the water from water treatment plant to cycle chemistry system (water /steam). To monitor chemistry Eskom Matimba also consist of laboratory that monitors and verifiers process analysers and plant performances. The chemistry is monitored using analytical instruments and online process analysers. This are all required to be serviced and calibrated annually by and external service provider preferably OEMs. These instruments are used to prolong the life span of the plant and ensures that there is good laboratory practices and quality assurance.

1.2 *Employer*'s requirements for the *service*

Quantity	Instrument	Service Number	Service to be rendered	repairs
1	Agilent Technologies 720 ICP-OES	3000014351 0694068	Service (service kit) Service report Multi wave standard calibration.	Repair of camera board Repair of faulty instrument components
1	Agilent technologies Carry 60 Uv-vis	3000011974	Service (service kit) and calibration for reactive silica 0-30ppb and 0-400ppm, ammonia 0-20ppm Service and calibration report Repair of faulty instrument components	Repair or replacement of peristaltic pump(sipper) PC, Agilent software , Sample cuvettes, carry uv optics and uv lamps and all the carry uv internals.
1	Seivers 900 potable TOC	3000015319 0698953 0701368	Service (service kit: oxidisers, acid, uv lamp ion exchange) Service and calibration report	Repair of faulty instrument components and PC (licensed software)
1	Seivers M9 portable TOC analyser	3000015319	Service (service kit: oxidisers, acid, uv lamp ion exchange) Service and calibration report	Repair of faulty instrument components and PC (licensed software)
1	SpectrAA varian 50 AAS	3000013282	Service (service kit) Service report Repair of faulty instrument components	Repair of faulty instrument components
1	Anton paar Multiwave GO Plus		Service and calibration of temperature sensor	Repair of faulty instrument components

			Service report	
2	Merk Mili-Q IQ7000	0686271 0686277 0686274 3000021356	Service (service kit: Q-Guard and filters) Service report	Repair of faulty instrument components (arms, fitting and pressure gauges
8	Orion 2111LL	3000032993	Service (service kit: ISE and ref electrode, filter, tubing and o-rings standard and etching solutions) Service report	Repair or replacement of faulty instrument components: sensing cables, PCB, air pump and valves
2	Waltron Silica	3000032993	Service (service kit: waltron consumable kit) Service and calibration report	Repair or replacement of faulty instrument components: as peristaltic pumps and pinch valves. Sample pump, LED kit, flow cell
3	HANNA 5I5522-02 pH /SC	STS-067482	Service & calibration Service report	Repair/replacement of electrodes
1	Palin test photometer 7500	3000013919	Service (service and calibration including cuvettes and battery pack replacement) Service report	Repair or replacement photometer Replacement of cuvettes
1	Palin test micro 800 DO	3000013924	Service Service report Repair/replacement of electrodes	Replacement of DO electrode. Repair or replacement of DO
1	Palin test pH/conductivity micro 800 multi	3000017740	Service Service report	Repair/replacement of electrodes
1	Palin test chlorometer	3000022907	Service Service report	Repair/replacement of chlorometer
1	LECO AC 600	3000025777 0687400 0694175 0694172 0685068 0685056 0694177 0689628 0694177 0694174 0694176 0689628 0689629 0024117	Service (service kit) Service report Repair of faulty instrument components	Repair of faulty instrument components

		0687403		
1	LECO S832	3000018892 0694178 0694179 0694171 0711495 0693923 0669663 0727648 0727647 0727646 0727948 0727803	Service (service kit) Service report Repair of faulty instrument components	Repair of faulty instrument components
1	LECO AF 700	3000014309 0689631 0694173 0694168 0694179 0054581 0689630 0685437	Service (service kit) Service report Repair of faulty instrument components	Repair of faulty instrument components
7	**Furnaces** **Ash** • FA 01 (ATS Darvan Brenko) • FA02 01 (ATS Darvan Brenko) • FA03 (ATS Micron Equip) • FACG01 (Lenton) **Volatile** • FV01(ATS Darrvan Brenko) • FV02 (ATS Darrvan Brenko) • FV03 (ATS Micron Equip	3000013154	Service (service kit) Service report Calibration. Calibration certificate. Repair of faulty instrument components	Repair of faulty instrument components
4	Ovens	3000013155	Service (service kit)	Repair of faulty

	• OIM01 (Darvan Brenko) DOV 123A Drying oven. • OIM02 (Darvan Brenko DOV 123A drying oven. Physical lab • AI03 (Scientific , • AI04 Scientific)		Service report Calibration Calibration certificate. Repair of faulty instrument components.	instrument components
2	**Hardgrove** • HI 01 (Waltech instrumentation NMRV 03 • HGI 02 Darvan Brenko 50Hz	3000021495	Service (service kit) Service report Repair of faulty instrument components	Repair of faulty instrument components
2	**Balances** Sartorius	3000016832	Calibration. Calibration certificate	N/A
3	**Scale** • STP 01 (ADAM 10c/40c) • SW02 ADAM)	3000018188	Calibration. Calibration certificate	N/A
8	**Mass pieces** General lab WS01, WS02 and WS03 (Intercal) Physical lab: (W01, W02,W03, W04, W05 (Intercal)	3000016831	Calibration. Calibration certificate	N\A
2	**Coal Splitters** Dickie & Stocklet splitterts		Service (service kit) Service report	Repair of faulty instrument components

2	**Coal crushers** • Boston gear 1414lb model 4-E • Askari model 4-E		Service (service kit) Service report	Repair of faulty instrument components
4	**Hygrometers** • Huato A200 • Vici 288 – CTH • Bio termp	3000019310	Calibration. Calibration certificate	Repair of faulty instrument components
8	**Thermocouples** • Sinometer DM680 6801B • Gigi – sense Type -K	3000017228	Calibration. Calibration certificate	Repair of faulty instrument components
1	Scientific water bath	3000018570	Calibration. Calibration certificate	

1.3 Interpretation and terminology

The following abbreviations are used in this Service Information:

Abbreviation	**Meaning given to the abbreviation**
PCB	Printed Circuit board
CPP	Condensate polishing plant
WTP	Water treatment plant
DO	Dissolved oxygen
ISE	Ion selective electrode
PPM	Parts per million
PPB	Parts per billion
LED	Light Emitting Diode
OEM	Original equipment manufacturer
SHE Rep	Safety Health Environment representative
HIRA	Hazard Identification Risk Assessment

OHS	Occupational Health and Safety
PPE	Personal Protective Equipment
SHE	Safety Health and Safety

2 Management strategy and start up.

2.1 The *Contractor*'s plan for the *service*

Instrument	Service by OEM or authorised service technician or engineer	Repair or replacement
Agilent Technologies 720 ICP-OES	Once per year	As in when required
Agilent technologies Carry 60 Uv-vis	Once per year	As in when required
Seivers 900 potable TOC	Once per year	As in when required
Seivers M9 portable TOC analyser	Once per year	As in when required
SpectrAA varian 50 AAS	Once per year	As in when required
Anton paar Multiwave GO Plus	Once per year	As in when required
Merk Mili-Q IQ7000	Once per year	As in when required
Orion 2111LL	Once per year	As in when required
Waltron Silica	Once per year	As in when required
HANNA 5I5522-02 pH /SC	Once per year	As in when required
Palin test photometer 7500	Once per year	As in when required
Palin test micro 800 DO	Once per year	As in when required
Palin test pH/conductivity micro 800 multi	Once per year	As in when required
Palin test chlorometer	Once per year	As in when required
LECO AC 600	Once per year	As in when required
LECO S832	Once per year	As in when required
LECO AF 700	Once per year	As in when required
Furnaces **Ash** FA 01 (ATS Darvan Brenko) FA02 01 (ATS Darvan Brenko) FA03 (ATS Micron Equip) FACG01 (Lenton) **Volatile** FV01(ATS Darrvan Brenko) FV02 (ATS Darrvan Brenko)	Once per year	As in when required

FV03 (ATS Micron Equip		
Ovens OIM01(Darvan Brenko) DOV 123A Drying oven. OIM02(Darvan Brenko DOV 123A drying oven. AI03 (Scientific) AI04 Scientific)	Once per year	As in when required
Hardgrove HI 01 (Waltech instrumentation NMRV 03 HGI 02 Darvan Brenko 50Hz	Once per year	As in when required
Balances Sartorius	Once per year	As in when required
Scale STP 01 (ADAM 10c/40c) SW02 ADAM)	Once per year	As in when required
Mass pieces WS01, WS02 and WS03 (Intercal) (W01, W02,W03, W04, W05 (Intercal)	Once per year	As in when required
Coal Splitters Dickie & Stocklet splitterts	Once per year	As in when required
Coal crushers Boston gear 1414lb model 4-E Askari model 4-E	Once per year	As in when required
Hygrometers Huato A200 Vici 288 – CTH Bio termp	Once per year	As in when required
Thermocouples Sinometer DM680 6801B Gigi – sense Type -K	Once per year	As in when required
Scientific water bath	Once per year	As in when required

2.2 Management meetings

Service report feedback meeting
After every service is done a service report must be drafted by the contractor and a meeting is to be scheduled to discuss the findings from the service. This meeting will highlight if spares are required to ensure that the analysers are in a good working condition. This must be done before invoice is submitted and service entry is done by the end user after every service is rendered.

Regular meetings of a general nature may be convened and chaired by the *Supply Manager* as follows:

Title and purpose	Approximate time & interval	Location	Attendance by:
Risk register	Once annually	Chemical services	SHE REP from Eskom and SHE REP of the contracting company
Overall contract progress and feedback	Monthly	Microsoft teams	*Employer*, *Contractor*
Service Feedback	After every service	Chemical services Ops boardroom	Employer contractor and end users (technicians)

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

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

2.3 *Contractor*'s management, supervision and key people

As in when required, an order will be placed the contractor will be required to send an authorised and competent to work on the that brand of instruments. The service technician /engineer will be required to bring their training certificate or authorisation letter from OEM prior to the service. The service engineer/ technician will be always allocated a technician from Eskom throughout the service to verify work.

As in when required the contractor will avail an authorised /competent service technician or engineer. No site supervisors or managers will be required.

2.4 Documentation control

All orders will be sent before work can commence as Task orders that the contractor must acknowledge and send back.
Service reports must be sent with the OEM letter head and signed by the competent or authorised

service technician.
Certificates of calibration must be in an OEM letter head with the specifications and results written properly.
Any other communications can be sent on emails to the contract manager in a letter attached to the email.

2.5 Training workshops and technology transfer

During services only authorised and trained technicians can service this analysers. During the service Eskom technicians will be allocated for on job training and skills transfer from the authorised and trained OEM technician.

2.6 Design and supply of Equipment

S/N and specs for the instruments

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

2.7.1 Equipment

Gas bottle and regulator and flow cell for the gas detectors may be required as in when for verification purposes by Eskom to be left behind after a service is done.

2.7.2 Information and other things

- Full-Service report with the calibration information, findings from the service, Required spares if defective and a calibration certificate.
- Delivery note.
- Service technician/ engineer certificate of competency and authorisation letter if none OEM to work on their analysers.
- Service kit list with details of what was supplied during the service

3 Health and safety, the environment and quality assurance

3.1 Health and safety risk management

3.1.1 The Contractor shall comply with the health and safety requirements contained in SHE/OHS Specification and the approved safety file.

3.1.2 The 37-2 agreement to be signed by Contractor and Employer representatives.

3.1.3 The SHE/OHS professional conducts internal audits at planned intervals to monitor compliance to the contractual health and safety requirements.

3.1.4 The Contract Manager conducts inspections at planned intervals to monitor compliance to the contractual health and safety and legal requirements.

3.1.5 The Contractor may be selected during internal and/or external Matimba Power Station audits to verify compliance to legal and contractual SHE/OHS requirements. The Contract Manager will communicate this at relevant time periods.

3.1.6 In addition to the requirements of the applicable laws governing the occupational health and safety, Matimba Power Station OHS requirements particular to the service and the Affected Property for this contract shall be adhered to for the duration of the contract.

3.1.7 The minimum requirements for the Contractor to gain access to Matimba Power Station include the but not limited to:

3.1.7.1.1.1 Valid Medical fitness certificate

3.1.7.1.1.2 Police clearance

3.1.7.1.1.3 Identification document (RSA ID or equivalent)

3.1.7.1.1.4 National Drivers Licence (applicable to drivers)

3.1.7.1.1.5 Proof of Matimba Power Station Safety Induction

3.1.7.1.1.6 Adherence to the Eskom Life-saving rules 3 and 4, Be Sober and Buckle up.

Rule	Description of rule
3	BUCKLE UP No person may drive any vehicle on Eskom business and/or on Eskom premises: Unless the driver and all passengers are wearing seat belts
4	BE SOBER No person is allowed to be under the influence of intoxicating liquor or drugs while on duty

3.1.7.2 Applicable risk-based PPE.

3.1.7.3 Valid letter of good standing always (COIDA)

3.1.2 Key Performance Indicators

Contractor/supplier Management Key Performance Indicators (KPI's)

1. Maintain Health and Safety file and compliance to the health and safety plan, Eskom SHE/OHS specification and applicable legislation.
2. Always maintain good housekeeping.
3. Implement and monitor near miss programme (reporting of near misses).
4. Comply to Planned Job Observation programmes.
5. Zero Fatalities
6. At any given point, the OHS performance must be within the lost time injury (LTI) tolerance level as amended.
7. All incident investigations shall be completed within 30 days of the occurrence of an incident.
8. Incident investigation recommendations shall be closed within the recommended time frame recorded in the Incident investigation report.
9. Close audit findings as per the recommended time frames as per audit report or action raised in SAP QIM
10. Close Non-conformance as per the recommended time frames in SAP QIM

3.1.3 Contract completion and sign off

On completion of the project/contract, Eskom team (led by the Contract Manager) involved in the project together with the Contractor shall conduct the final meeting to identify the gaps prior to the contract close out. Before the final invoice is paid/processed, the Contract Manager shall ensure that the below requirements are met:

a. Close all incidents and audit findings.
b. Clean the respective yard and ensure good housekeeping where the contractor was working.
c. Contractor shall submit safety statistics and a safety file to Eskom BU Safety department for closeout and filling.

Completion of a closeout report (Annexure D form as per 32-726) to close the contractual work

3.2 Environmental constraints and management

The *Contractor* shall comply with the environmental criteria and constraints stated:

The contractor shall ensure that all his/her activities related to manufacturing, supplying and delivering and operation of their product is in line with the relevant environmental legislation.
They shall coordinator their activities in line with the requirements of ISO 14001: 2015 and Matimba Power Station environmental management system.
The contractor shall ensure that in the execution of his/her activities, no contamination of water (either surface or underground), no disturbance of the land and biodiversity within Matimba premises, no waste will be disposed of in an irresponsible manner.
The contractor shall ensure that his/her practices are in line with Eskom SHEQ Policy (32-727) and Matimba Power Station Environmental Policy Statement (PS/270/083).
The contractor shall prepare environmental aspects and impacts which are in line with the scope as per the tender document.

3.3 Quality assurance requirements

The contractor shall be in possession of ISO 17025: 2017 for gas metrology. Calibration shall be done using appropriate calibration gas mixtures. The contractor shall submit a completed contract quality plan using the Eskom Contract Quality Plan Doc No**. 240-109253698 Rev 3**

3.4 Subcontracting

3.4.1 Preferred subcontractors

N/a

3.5 Plant and Materials

3.5.1 Specifications

Instrument models as state below with their model numbers and all related spares that can be required for the model:

Industrial scientific iBrid MX6
Vetis Pro
Dragger X-am 500
Ammonia gas master online gas detector ERO WCON
chlorine gas detector evoqua
residual chlorine evoqua
Nova H2 purity
Agilent Technologies 720 ICP-OES
Agilent technologies Carry 60 Uv-vis
Seivers 900 potable TOC
Seivers M9 portable TOC analyser
SpectrAA varian 50 AAS
Anton paar Multiwave GO Plus
Merk Mili-Q IQ7000
Orion 2111LL
Waltron Silica 3041
Palin test photometer 7500 s/n: PT7510914963
Palin test micro 800 DO s/n: 2570669
Palin test pH/conductivity micro 800 multi s/n: 2426347
Palin test chlorometer s/n: 04507180033
LECO AC 600
LECO S832

LECO AF 700
Furnaces
Ash
FA 01 (ATS Darvan Brenko)
FA02 01 (ATS Darvan Brenko)
FA03 (ATS Micron Equip)
FACG01 (Lenton)

Volatile
FV01(ATS Darrvan Brenko)
FV02 (ATS Darrvan Brenko)
FV03 (ATS Micron Equip

Ovens

OIM01(Darvan Brenko) DOV 123A Drying oven.
OIM02(Darvan Brenko DOV 123A drying oven.
AI03 (Scientific)
AI04 Scientific)
Hardgrove
HI 01 (Waltech instrumentation NMRV 03
HGI 02 Darvan Brenko 50Hz
Balances
Sartorius

Scale
STP 01 (ADAM 10c/40c)
SW02 ADAM)
Mass pieces
WS01, WS02 and WS03 (Intercal)

(W01, W02,W03, W04, W05 (Intercal)

Coal Splitters
Dickie & Stocklet splitterts

Coal crushers
Boston gear 1414lb model 4-E
Askari model 4-E
Hygrometers
Huato A200
Vici 288 – CTH
Bio termp
Thermocouples
Sinometer DM680 6801B
Gigi – sense Type -K
Scientific water bath

3.5.2 Correction of defects

During service if a defect is noted it must be recorded on the service report and sent after service. The service engineer is to discuss the finds at the service report feedback meeting if item can be

repair this must be done during the service. But if the item is defective and requires to re replaced an order will be loaded based on the service report recommendation. The defective item should be repaired within 3weeks after placement of order.

3.5.3 *Contractor*'s procurement of Plant and Materials

- All procured replacement spare items must have warranty unless if it's a consumable.
- The contractor is to ensure that all spares supplied are in working order and have a factory test certificate to ensure that they are in good working order.
- The contractor is to ensure that all procured items are handled and delivered in a safe manner.
- If an item is delivered and installed with a defect it will be rejected.

3.5.4 Tests and inspections before delivery

- All chemical reagents and standards used bust be inspected before use by the process supervisor, the chemicals must be accompanied with certificate of analysis and 16 points SDS.
- All spares and service kits must be checked by the process supervisor to check if the correct quantity of spares is supplied by the contractor.
- All inspected items must be compactable with the model numbers of the instruments.
- All items are to be inspected for quality control purposes.

3.5.5 Plant & Materials provided "free issue" by the *Employer*

No free issues, all service and spare items are to be supplied by the contractor.

3.5.6 Cataloguing requirements by the *Contractor*

N/a

4 Working on the Affected Property

LAR must be obtained at the control room before any work can commence and permit to work were required.

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

- All equipment that the contractor brings to site must be declare at the security gate.
- The vehicle used must comply road worthy standards and declared at the gate (car permit)
- Permit to enter the station must be requested 24hours before the contractor can enter the premises.
- Information required for the permit:
  Id number
  Surname and name
  Company employee number
  Company details
  Emergency number and contact details.

Car registration number, car make, car model car colour
Duration on site

4.2 People restrictions, hours of work, conduct and records.

- All technicians to be involved as in when is required must have their details sent to the contract manager before coming to site.
- Work must be done as in work is required.

4.3 Equipment provided by the *Employer*

N/a

4.4 Site services and facilities

4.4.1 Provided by the *Employer*

- Instruments are easily accessible no hooking at heights is required.
- All permit to work will be done on site by the responsible person prior to contractor working.
- Demin and Ultra-pure water will be provided by the chemical services Laboratory section when required.

4.4.2 Provided by the *Contractor*

- All service items required to complete the service and repair successfully must be provided by the contractor.

4.5 Control of noise, dust, water and waste

- While working at the plant all mandatory signs must be adhered to, if ear plugs/muffs, helmets with a chin strip and googles are mandatory, they need to be always worn.
- If there are safety restrictions at the plant the contractor is to work on prior to the work.
- The pre-task risk assessment done must indicate as such with mitigations of the safety issue in question.

4.6 Hook ups to existing works

N/a

4.7 Tests and inspections

4.7.1 Description of tests and inspections

After service or repair is done the quality control sample must be run and instrument must be tested for verification purpose.

4.7.2 Materials facilities and samples for tests and inspections

Service workshop for specific analyzers if service is not done onsite.