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KOEBERG NUCLEAR POWER STATION

USER REQUIREMENT SPECIFICATION

Provision of the Fifteen (15) yearly Grid Synchronization and Connection System (GSY) Bus Duct Maintenance Services at Koeberg Operating Unit for a period of five (5 years).

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Date:	2024-10-14	2024-10-14	2024-10-14

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1. DESCRIPTION

In conjunction with the NEC Contract, the Short Contract Core Clauses 1-9 (3rd Edition), the SA OHS&A, and the South African Construction Regulations, carry out all the activities listed below that are related to the Maintenance, Inspection and Repairs to 24Kv - IPB - GSY Bus ducting, for outage 227 up to outage 129.

Note: This type of Planned Maintenance can only be done inside the refueling outage.

2. SCOPE OF WORK

2.1 Provide Documentation

- Provide the *Employer* with a Quality Plan.
- Provide the *Employer* with a Risk Assessment.
- Provide the *Employer* with your SHE Safety File and Plan.
- Provide the *Employer* with Letters of appointment.
- Provide the *Employer* with a Copy of the “letter of notification of construction” to the South African Department of Labour.

2.2 Perform Work

- Supply spares as per IPB Bus duct drawings, see Section 11.
- Perform a pre-inspection and provide recommendations for repair.
- All polymer components including gaskets, washers, spacers, bellows and seals to be renewed.
- Bus duct Supports:

Shoes:

- Site preparation and visual inspection of all shoes.
- Remove the corroded shoes, shims/spacers and accessories and renew.
- Repair Shoes and/or Renew Shoes as required.
- Renew nuts, bolts and washers, verify and apply torque settings.

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Frame:

- Carry out corrosion check of all IPB supports and provide a report.
- Renew Nuts, bolts and washers, verify and apply torque settings.

Earths:

- Verify all earth straps and connections.
- Renew nuts, bolts and washers, verify and apply torque settings.
- Inspect all bus bar flexibles and renew as required.
- Renew bus bar flexible nuts, bolts and washers and apply torque settings.
- Inspect all bus bar down droppers and renew nuts, bolts and washers and verify torque settings.

Insulators:

- Inspect all porcelain insulators, clean and renew as required.
- Renew insulator neoprene gaskets.

- Bus Duct:

Flexibles:

- Inspect all bus duct bolted and welded flexibles.
- Provide a report of weld inspections.
- Renew nuts, bolts and washers, verify and apply torque settings.

Shorting plates:

- Inspect shorting plates.
- Repair as required.
- Renew nuts, bolts and washers, verify and apply torque settings.

Duct Enclosures:

- Inspect and clean inside of the bus duct once all work is complete.
- Paint the inside of the bus duct as required.

- Hatch doors:

- Open all hatch doors for renewal of the hatch door seals.
- Renew nuts, bolts and washers, verify and apply torque settings.
- Provide a report of weld inspection.

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Bellows:

- Renew all old bellows.
- Perform internal Pressure Testing in accordance with employers' acceptance criteria.
- Repair bus duct leaks to achieve the employer's acceptance criteria.
- Carry out post maintenance insulation test to achieve employer's acceptance criteria.
- Provide technical assistance for minor works.
- Clear/clean working area.
- Ensure no foreign material is left in duct, cubicles and transformer yard.
- Complete all SITE documentation.
- Sign off all permitry and Completion Certificates.

3. CATEGORIES OF LABOUR REQUIRED

- The number of staff required to execute this work is to be decided by you the *Contractor* after your walk down for quotation of the work scope, together with the period of time available to complete the scope. Submit the names of the selected *contractors* to the *Employer* for review. This breakdown of resources must be stipulated in your quote.
- The *Contractor* must ensure that the staff he supplies to the *Employer* are legitimately qualified as required namely a Trade Test Certificate or a completed indentureship for the applicable trade. The *Contractor* must personally verify and ensure that only skilled and properly authorised and qualified artisans are supplied to the *Employer*. At the discretion of the relevant Group Head, the *Contractors* staff would be required to do a competency-based assessment to give the *Employer* the assurance of applicable competence. In the event of the *Contractor* supplying staff and upon investigation do not meet the requirements; the *Employer* will only compensate the *Contractor* at

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the actual (proven skill/authorisation/qualification) level of that individual.

- It may be required to work outside normal working hours so not to cause any delay to the outage program.
- All work will be coordinated by an Eskom Project Leader dedicated to the project, on a daily basis.
- It is expected that supervisory representatives will be present on site on a daily basis. No work shall be left unsupervised.

4. TIMING AND PLANNING

The work is to be performed in outage 227 up to outage 129.

Dates and windows to perform the work will be provided.

Note: dates are subject to change and will be communicated timeously.

5. SHIFT REGIME/PROJECT STRATEGY

Depends on the window provided by OCC.

- Shift work is not required for this task. The *Contractor* must provide a detailed risk assessment, quality plan and work schedule, stipulating resources and requirements to show how the work will be completed in the allocated time frame. This plan will be integrated into the Outage schedule before being approved.
- Normal working hours will apply to; Access formalities to Site, all mandatory training, *Site* preparation and clearance.

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6. TRAINING

6.1 Work specific training

The contractor is expected to be formally qualified in all required tasks. Proof of qualification will be necessary.

- Confined Space training
- Working at heights and material handling
- Technical FME

6.2 Generic training

Perform all required Plant access training.

7. ACCESS FORMALITIES

The contractor is responsible to supply all his staff with safety gear prior to the start of the work. Personal Protective Equipment must comply with SABS standards.

8 (A). *ESKOM-KOEBERG (EMPLOYER'S) SCOPE OF SUPPLY*

Eskom can assist with additional hand tools, material, spares and equipment to perform the tasks. (*)

- Work packages and HV permits to perform the work.
- Access to all work areas.

Eskom will also supply:

- Site Responsible Person
- Work authorizations and Permits to commence the work.
- Crane availability when required.
- All site equipment transport means if required.
- Assistance with regards to ordering additional spares.

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- Access to work areas for personnel and equipment.
- Temporary offices
- Electrical supply will be provided on discussion of Contractors requirements.

8 (B). CONTRACTOR'S SCOPE OF SUPPLY

Contractor to provide all necessary spares in line with a (15Y) major bus duct overhaul.

Special Tools and other equipment brought onto site by the contractor are subject to a technical review by Koeberg prior to the intervention. This review will take place prior to the intervention. The contractor shall submit all technical information about this equipment prior to this time.

All equipment brought onto site must be tested and calibrated. Calibration certificates must be submitted to Eskom prior to use.

9. QUALITY REQUIREMENTS

The work described in this specification is classified Q3 in accordance with KGA-003. No design and development activities are required. QA/QC actions and controls may be required for the service as well as a final inspection and tests if so requested.

The Contractor must demonstrate his ability to fulfill the following quality requirements:

- Provide assurance to the client that the work is carried out in accordance with an approved Quality Management System,
- A Process Quality Plan is to be available for the equipment with reference to checklists, Inspection sheets, Detailed work instructions, test reports, Witness and Hold points,
- Provide proof of staff competency,
- Maintain quality records on Bus duct history,
- Maintain FME controls and adhere to the employers FME plan.
- Where essential, indicate any additional steps required to ensure that all parameters of Major Maintenance are met and are not out of line of either procedure or quality plan,

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NOTE: All cleaning or lubricating materials brought onto site must be identified up front and put through the Koeberg CRACK process.

- The tasks will be executed in accordance with authorized Quality Plans and Risk Assessments.
- All documentation prepared by the contractor need to be approved by Eskom Quality Assurance and Quality Control, prior to the start of the work.
- All spares need to be processed via the onsite PQE.
- All items renewed and repaired must conform to the design basis.
- All changes to the design base must be discussed with the employer for approval.

10. REFERENCES

IPB GSY system drawings and Maintenance Manuals can be made available on site if required.

Table 1: Section 4 of Identification File (MM305 Vol 1 & 2)

OEM REFERENCE	CLIENT REFERENCE	DESCRIPTION
P-4320-A40047A	KBA1215A01064	Identification File
P-4320-A40008 A	KBA1215A01005	Manual of Operation and Maintenance instructions
P-4320-A00001	KBA1215A01011	Connection between Gen and Gen Tx
P-4320-A00002	KBA1215A01012	General layout outdoor delta connection
P-4320-A10003	KBA1215A01013 (SH2)	Closing plates of fire wall
P-4320-A10003	KBA1215A01013 (SH1)	Wall entrance plates – Erection drawing
P-4320-A00003	KBA1215A01014	Connection to gen phase terminals
P-4320-A10004	KBA1215A01015	Junction to the main transformer
P-4320-A10008 C	KBA1215A01016	Unit transformer connection
P-4320-A00005	KBA1215A01017	Generator circuit breaker connection
P-4320-A00006 C	KBA1215A01018	Pot Tx & Exc Tx Cubicle – Connection & Installation
P-4320-A00007	KBA1215A01019	Enclosed VT support platform showing connection and installation
P-4320-A00008	KBA1215A01020	Earthing switch installation
P-4320-A20000	KBA1215A01021	Gen Terminal enclosure erection drawing
P-4320-A20001	KBA1215A01022	Neutral cubicle
P-4320-A00009	KBA1215A01023	Generator terminal ventilation system
P-4320-A20006	KBA1215A01025	Closing cover erection drawing
P-4320-A20010	KBA1215A01026	Enclosure cross bars mounting
P-4320-A00014	KBA1215A01030	Earthing guide drawing
P-4320-A40032 B	KBA1215A01031	Earthing type connection
P-4320-A30005	KBA1215A01032	Earthing part list
P-4320-A00011 C	KBA1215A01033	Neutral connection
P-4801-A30000	KBA1215A01044	Gen Neutral connection
P-4801-A00000	KBA1215A01045	Generator neutral connection assembly drawing
P-4320-A00025	KBA1215A01050	Stabilizers tee off mounting
P-4320-A10019	KBA1215A03015	Drawing of Structures – Inside Station
P-4320-A00004	KBA1215A03014	Drawing of Structures – Outside Station
P-4320-A10015	KBA1215A03006	Framework mark 3331
P-4320-A10016	KBA1215A03007	Framework mark 3332
P-4320-A00021	KBA1215A03008	Framework mark 3333
P-4320-A00022	KBA1215A03009	Framework mark 3334
P-4320-A00023	KBA1215A03010	Framework mark 3335
P-4320-A10017	KBA1215A03011	Framework mark 3336
P-4320-A10018	KBA1215A03012	Framework mark 3337
P-4320-A30023	KBA1215A03013	Framework part list
P-4108-A00026	KBA1215A00001	Turbine Hall-Unit 1 & 2-Platform Under Generator-Level 0,001-24 kV Isolated Phases Bus-Equipment-A
P-4108-A40861	KBA1215A01001	24 kV Isolated Phase Buses Tech Spec Rev4

11. DOCUMENTATION

Additional documentation to be supplied by the contractor, besides the quality documentation are:

- A detailed quality plan, risk assessment with durations and resources of all the activities. Stipulate support requirements.
- Calibration certificates for testing equipment.

Contractor to issue a certificate of conformance on completion of the work.

12. PRICING STRUCTURE

As per Contract.....

ACTIVITY	PRICE
Labour	
Transport costs	
Mobilization costs/Project plan	
Hire of additional equipment	
Other(spares)	
TOTAL	

14. APPENDICES

N/A