



QUALITY PLAN

Transmission Project Delivery

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1. Introduction

This document is mainly focused on the Mercury MTS Expedited IPP Program - Mercury 3rd 400/132 kV transformer. Mercury Substation was identified as one such station. Mercury is located near the town of Orkney in the Free state.

Mercury MTS is a 765/400/132/ kV substation. It consists of 2x 500 MVA 400/132 kV autotransformers. The substation utilises double busbars for all voltage levels. There are 3x 400 kV feeders, 10 x 132 kV feeders, 1x132kV bus coupler, 1x400kV bus coupler and 2 x 132 kV shunt capacitor bank. The 75kV yard is not mentioned because the scope is limited to 400/132kV yards.

A third 500 MVA 400/132 kV transformer is required at Mercury Substation to integrate an additional 980 MW to the 67.9 MW. This will ensure that the total of 1048 MW will be connected at an N-1 level of network redundancy.

The project will be constructed by Engineering Procurement and Construction (EPC) and managed by Eskom Transmission Project Delivery (TPD).

2. Supporting Clauses

2.1 Scope

Mercury MTS Expedited IPP Program - Mercury 3rd 400/132 kV transformer

The scope of work is as follows:

- Equip 400kV transformer bay.
- Equip the 400kV bus coupler A
- Equip the busbar number 1, 400kV bus section.
- Install 1 x 400/132 kV 500MVA Transformer
- Equip 132kV transformer bay. • Equip the 132kV bus coupler B
- Equip the busbar number 1, 132kV bus section.

2.1.1 Purpose

The Quality Management Systems focuses mainly on how the Management team plans and executes their quality initiatives. This document does not form part of the works information in the request for tender and contract documentation but provides confidence that an agreeable level of quality, of the works and service, will be achieved at Mercury MTS Expedited IPP Program - Mercury 3rd 400/132 kV transformer.

2.1.2 Applicability

This document is applicable to the Mercury MTS Expedited IPP Program - Mercury 3rd 400/132 kV transformer.

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2.1.3 Effective date

September 2023

2.2 Normative/Informative References

- [1] ISO 9001:2015 Quality Management Systems
- [2] ISO 10005:2005 Quality Management Systems – Guideline for quality plans

2.2.1 Normative

- | | |
|--|--------------|
| [3] Document and records management procedure | 32-6 |
| [4] Control of Nonconforming Outputs Procedure | 240-44175038 |
| [5] Business Management System Audits Standard | 250-53413860 |
| [6] Interdependency related processes | TPDMAN-WN-16 |
| [7] Scope related process | TPDMAN-WN-17 |
| [8] Time related process | TPDMAN-WN-18 |
| [9] Cost related process | TPDMAN-WN-19 |
| [10] Communication- related process | TPDMAN-WN-20 |
| [11] Risk related process | TPDMAN-WN-21 |
| [12] Purchasing related process | TPDMAN-WN-22 |
| [13] Customer Satisfaction | TPDMAN-WN-24 |

2.3 Definitions

2.3.1 Document:

Conformity: The fulfilment of a requirement.

Concession: Permission to use or release a product that does not conform to specified requirements.

Defect: The non-fulfilment of a requirement related to an intended or specified use.

Inspection: Conformity evaluation by observation and judgement accompanied as appropriate by measurement, testing or gauging.

Non-conformity: The non-fulfilment of a requirement.

Process: A set of inter-relating or interacting activities which transforms inputs to outputs.

Product: A result of a process.

Procedure: Specified way to carry out an activity or a process.

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Project: A unique process, consisting of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements, including the constraints of time, cost and quality.

Quality: Fitness for use.

Quality Control: A part of quality management focused on fulfilling quality requirements.

Quality Assurance: A part of quality management focused on providing confidence that quality requirements will be fulfilled.

Quality Management System: Management system to direct and control an organization with regard to quality.

Quality Plan: A document specifying which procedures and associated resources shall be applied by whom and when to a specific project, product, process or contract

Quality Planning: A part of quality management focused on setting quality objectives and specifying necessary operational processes and related resources to fulfil the quality objectives.

Record: A document stating results achieved or providing evidence of activities performed.

Requirement: A need or expectation that is stated, generally implied or obligatory.

System: A set of inter-related or interacting elements.

Test: Determination of one or more characteristics according to a procedure

2.4 Abbreviations

Abbreviation	Explanation
EA	Environmental Authorization
EMP	Environmental Management Plan
ITP	Inspection and Test Plan
NEC	New Engineering Contract
OEM	Original Equipment Manufacturer
PDD	Power Delivery Department
PDP	Power Delivery Project
PM	Project Manager
QA	Quality Assurance
QC	Quality Control
QMS	Quality Management System
QP	Quality Plan
SD&L	Supplier Development and Localisation
SHEQ	Safety Health Environment Quality
URS	User Requirement Specification

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2.5 Roles and Responsibilities

The Eskom TPD responsibilities includes:

Senior Manager Projects shall be responsible for:

- Ensuring that responsibilities and authorities are defined and communicated to Mercury MTS Expedited IPP Program - Mercury 3rd 400/132 kV transformer.
- Communicating the importance of meeting customer requirements to all Programme Manager.
- Ensuring that quality objectives are established and implemented.
- Conducting management review, and
- Ensuring the availability of resources to implement quality management on all projects.

Programme Manager shall be responsible for:

- Allocating resources, responsibilities, and authority as required,
- Communicating the importance of meeting customer requirements,
- Define applicable processes and determine inputs and outputs
- Ensuring that the requirements for this quality plan is implemented to all the scheme related projects.

The EPC contractor responsibilities includes:

Project Manager shall be responsible for:

- Enforcing procedures, work instructions and forms in support of defined processes,
- Clarifying standard of acceptability for all requirements, including those which contain subjective judgement and thresholds,
- Identification of suitable inspection, testing and other verification activities,
- Identifying minimum quality records that will be kept on site,
- Initiating action to prevent the occurrence of any nonconformities regarding the quality of the product, service, process, and system,
- Identifying, recording, and addressing any problems regarding the quality of the product, service, process, and system,
- Initiating, recommending, or providing solutions through designated channels,
- Verifying the implementation of solutions.

Quality Manager shall be responsible for:

- Monitoring and evaluating compliance to this plan.
- Periodically report on performance against this plan.

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Site Manager/ Site Supervisors shall be responsible for:

- Applying procedures, work instructions and forms in support of defined processes
- Carrying out all planned inspections,
- Controlling further processing, installation or commissioning of nonconforming products and services until the defect or unsatisfactory condition has been rectified,
- Monitoring and reporting progress on a weekly basis.
- Ensure that all records as provided in the form of Quality Dossier by the Contractor/Suppliers are part of the project handover to Eskom.

Quality Advisor shall be responsible for:

- Conducting awareness and training for quality management system,
- Initiating change management processes for documentation review,
- Conducting quality inspections at agreed interventions,
- Conducting internal audits on projects.

Cost Engineer shall be responsible for:

- Establish and maintain project forecast budgets and actual expenditure in conjunction with Project Manager.
- Compile and submit periodic reports to Integration Manager on cost management performance.

Planner shall be responsible for:

- Establish and maintain project schedules in conjunction with Project Manager.
- Provide feedback to Integration manager regarding critical paths and schedule performance.

Integrated Risk Manager shall be responsible for:

- Identify and maintain quality risks.
- Compile and submit periodic reports on key risks to the Integration Manager and Transmission Projects Delivery.

2.6 Process for Monitoring

Detailed monitoring requirements are through TPD Southern Programme Management meetings, Project Review Management Meetings, TPD Management Review Meetings, Site Progress Meetings, Audits, etc.

2.7 Related/Supporting Documents

Project Execution Plan.

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3. Document Content

3.1 Client Involvement

All URS shall be available and communicated Mercury MTS Expedited IPP Program - Mercury 3rd 400/132 kV transformer. During the planning phase EPC shall ensure that the drawings and specifications that are relevant and valid are available. All SHEQ requirements shall be available to the Buyer during squad check meeting.

In order to meet client satisfaction, it is imperative that the Eskom TPD is involved in all aspects related to quality of the project, starting from the planning stages. In order to ensure effective management of the project and client satisfaction clear communication lines shall be established and maintained.

The Southern Free State Region Team has identified the following customers all internal and external customers (procurement, finance, manufacturing, quality, safety, installation, and commission works) and measure satisfaction of these customers periodically. The results shall be presented at Management Review. If there are critical concerns ad hoc meetings may be held as and when the concerns are raised.

Applicable procedures and forms in this regard are:

- TPDMAN-WN-24

If required, the Client will be afforded the opportunity to evaluate the effectiveness of the implementation of this Quality Plan.

The Eskom TPD shall be involved throughout project execution. The Grid shall be invited to Site Project Progress Meetings. TPD shall be periodically updated through monthly reports and Southern Portfolio Progress Meetings. They will also be afforded the opportunity to conduct site visits if they require.

3.2 Control of Documents

Control of documents shall be in accordance to 32-6 Document and Records Management Procedure. However, it should be noted that documents on site shall be maintained as most practical given the limitations of site facilities. The TPD document controller shall offer project managers advice in this regard.

It is not expected that Eskom Site Representatives shall have access to OpenText or a fireproof filing cabinet but shall ensure pest, insecticide and rodent controls are used dependant of risk.

TPD shall also enforce an effective date of four months on all Eskom Corporate, TPD or Southern Portfolio documents due to the geographical locations of sites and the need to train Site Representatives on Documentation Control before requirements can be effectively implemented.

Mercury MTS Expedited IPP Program - Mercury 3rd 400/132 kV transformer shall periodically generate area specific forms and templates to address specific needs and requirements. These shall be registered and controlled internally on TPD Master Register.

All Project Teams are to ensure that the latest revised documentation are implemented within their functional responsibilities as required and apply controls in accordance to Document and Records Management Procedure.

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3.3 Control of Records

Control of records shall be in accordance with 32-6 Document and Records Management Procedure.

Quality records generated by the project team shall be retained in OpenText at Southern Portfolio Free State Programme Office. Records generated at site level shall be stored according to a filing matrix as defined by the document controller and the Programme Manager. The storage facilities would have to be as stated above under control of documents.

All Project documentation shall be uploaded onto OpenText in the respective file names by the Project Team **monthly**.

3.4 Provision of Resources

Project Manager shall ensure that adequate resources have been provided to implement this quality plan in all projects under execution.

The Project Manager shall ensure that all contractors have the necessary specifications to construct a product that conforms to client specifications.

The Project Manager shall also ensure that Site Representatives on project are considered adequate for effective monitoring of contractor activities.

All contractors shall allocate financial resources to enable employees to comply with all SHEQ and technical specifications.

3.4.1 Materials

All materials issued on the project shall comply with specifications. This includes free issue material which shall be provided as required by schedule. The contractor shall purchase required materials as and when required by the schedule of activities. The contractor shall ensure that their suppliers supply materials that conform to Eskom specification.

3.4.2 Human Resources

Site Manager/Supervisor shall be supported by a team of Site Representatives. Site Representatives will be trained and instructed in the application of quality management and will be responsible for effective quality management and monitoring for the areas under their control.

The Project Manager shall also be supported by the Quality Manager in terms of entrenching quality management principles in each project. Technical and Engineering input shall be obtained from Group Technology, Engineering and Land Development. Quality assurance shall be allocated to suitably qualified and experienced personnel. These people shall inspect, audit projects for compliance to management system, specifications and client requirements.

Specific responsibilities, authorities and accountabilities in terms of this Strategy shall be indicated in the relevant Project Execution Plan, the applicable Conditions of Contract and in the pertinent sections of the contract data, appointments, agreements and the Project Responsibility Matrix. Southern Portfolio reporting structures are indicated in approved organogram that are to be updated as and when changes occur.

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Site Supervisor will be trained and instructed in the application of quality management principles on site and will be responsible for effective quality management for the areas under their control. This does not detract Supervisor from their responsibilities in terms of environmental, health, safety and other supervisory functions.

All personnel are in turn responsible and accountable for the implementation of quality management in areas under their control.

The Contactor shall ensure that human resources are made available for product realisation. The resources shall include personnel with technical competence and quality assurance specialism.

3.5 Contractor, Sub-Contractor and Supplier Management

Prior to issuing enquiries, EPC contractors, as well as their nominated sub-contractors will be assessed and selected through a pre-qualification process, based on their ability to conform the technical and quality requirements.

Vendors sourced from the Eskom Vendor List are deemed to have been evaluated and approved for quality management system.

Based on the assessment above, the quality risk assessment will be done and mitigation proposed.

EPC Contractors, sub-contractors and suppliers will be monitored to ensure that they comply with the requirements of the Project as outlined on the contract. Principle Contractors shall enforce requirements of these contracts on all their sub-contractors. The Principle Contractor shall carry out all required tests, inspection and verification activities on their own work and those of their sub-contractors and report such activities to the Project Manager.

Products from suppliers shall be monitored either by the Principle Contractor or Eskom depending on who the contractual relationship is with.

The EPC Contractor/Suppliers and sub-contractor will maintain all quality records as specified and provide these in the form a Quality Dossier at the end of the project.

3.6 Inspection and Testing

The EPC Contractor/Suppliers and the Southern Portfolio shall adhere to the relevant clauses in the conditions of contract pertaining to inspections, testing and defects and notify each other of their inspections, tests and defects found.

The intent of inspection and testing on site is to ensure that only goods that comply with all the requirements are used in product realization. All goods and installations will be inspected or tested prior to commissioning as per the QITP to ensure conformance with the purchase specification.

3.7 Inspection and Test Plans

EPC Contractors and suppliers shall be monitored in accordance with the requirements for Inspection and Test Plans as contained in QM 58. Principal Contractors shall submit contract quality plans and inspection and test plans (QITP) for amendment and/or approval by the Project Manager prior to commencement of the contract.

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3.8 Inspection, Measuring and Test Equipment

EPC Contractors and suppliers shall be monitored to ensure that they comply in full with ISO 9001:2015 clause 7.6 – Control of monitoring and measuring devices. Audits and inspections will be carried out to ensure compliance and that these instruments are used effectively.

3.9 Project Quality Review

Project Reviews are to be done periodically during Project Execution in order to determine:

- a) If the product conforms to specifications.
- b) If management system is still relevant and effective.
- c) If there are any lessons learnt that could be integrated into knowledge management.

Management reviews shall be managed in accordance with PDPMAN-WN-36

3.10 Communication

TPD shall determine and implement methods for communicating with EPC contractors in relation to product requirements, contracts or order handling, customer feedback and customer complaints.

All communications for a specific project shall be done via the TPD Project Manager. This includes communications with Technology, Contractor, Procurement, Finance, SDL etc.

The SHEQ team shall communicate and train all applicable personnel on the Quality Management System. The SHEQ team shall also communicate the effectiveness of management reviews, which includes: Objectives and Targets, Communication and Customer Feedback, Status of Preventive and Corrective Actions, Follow-ups actions from previous management reviews, Audit Results, revised procedures, change in resources and change in specifications.

3.11 Design Management

All design and engineering shall be done by EPC in this regard is to ensure that the most valid specifications are sent out to the contractor for execution.

Project Managers shall be responsible for design change management and revision control of specifications and drawings as they will liaise with the relevant specialists and ensure that the contractor has the most recent and valid revision.

Project Managers shall also liaise with Engineering regarding designs that need to be reviewed either because change environmental conditions.

The Project Manager is responsible to ensure that the design is executable and if not, return it back to the designer.

3.12 Procurement Management

The TPD and EPC Quality shall ensure that purchased product conforms to specified requirements. At tender stage squad check meeting shall be held with the buyer to discuss the requirements of the project. Engineering and Quality shall evaluate and select suppliers based on their ability to supply product in accordance with the Scheme Projects requirements. The report for evaluations shall be sent to the Buyer.

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The TPD Project Manager coordinates all technical evaluations and submits reports to Commercial Department. The Project Manager participates in the Commercial process as required by Commercial Department.

3.13 Product Realization

The EPC Contractor team shall determine the required verification, validation, monitoring, inspection, and test activities specific to the product and criteria for product acceptance. Each contractor shall define quality plan and submit it for approval to Quality Manager.

The EPC Project Manager shall be supported by a team of Site Supervisors in the monitoring, inspection and testing processes. This will mostly be done against approved Inspection and Test Plans.

Other monitoring initiatives shall include audits; inspections etc. from various role players e.g. design engineers, site supervisors, project managers, quality advisors etc.

Product realisation shall be done according to TPD product realisation procedures which are as follows:

- Communication Related Process TPDMAN-WN 20
- Cost Related Process TPDMAN-WN19
- Interdependency Related Process TPDMAN-WN 16
- Purchasing Related Process TPDMAN-WN 22
- Risk Related Process TPDMAN-WN 21
- Scope Related Process TPDMAN-WN 17
- Time Related Process TPDMAN-WN 18

3.14 Identification and Traceability

During the erection and commissioning phases all records i.e. test reports, commissioning reports, erection manuals, final bay layouts and taking over certificates are checked, gathered and filed. This data package is handed to the Project Document Controller who in turn uploads this information to an electronic system.

Serial numbers, contract/ order numbers, drum numbers or any other means of traceable method of the equipment will be in the data package.

3.15 Customer Property

The EPC contractor is responsible for the customer property that has been delivered to site. The contractor shall ensure that security is provided on site to monitor and control all incoming and outgoing materials or free issue material.

Eskom Transmission customer property shall be maintained according to document control and record procedure where applicable. The lines servitude and premises owned by the customer shall be maintained as per requirements set out in EA EMP, Land-owner agreements etc.

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3.16 Preservation of Product

Incoming inspection shall be carried out for all free issue material by Eskom representative. Eskom is responsible for the design, suitability and usability of the free issue materials. If there is any damage to the product, the supplier shall be informed. All unacceptable products will be marked, set aside in a designated area and the contractor shall notify Eskom by means of a non-conformance report.

The contractor is responsible for ensuring that material or equipment delivered to site is of good quality. The contractor shall also ensure that the free issue materials are stored in a suitable environment in-order to prevent degradation.

3.17 Control of Non-Conforming Product

All defects and non-conformances shall be officially recorded and reported in accordance with the relevant clauses in the conditions of contract. In addition to the requirements of QM 58, reporting shall primarily be in terms of Notifications as per the relevant approved Control of Nonconforming Outputs Procedure 240-44175038. All Notifications shall be effectively managed, followed up and closed out.

When a non-conforming or defective product is identified during the course of consignment release inspections or reported from site, a follow-up inspection will be undertaken to verify the satisfactory correction of deficiencies noted before a release for dispatch or a construction activity may commence.

Nonconforming product shall also be identified during inspections and audits.

When deficiencies are identified in the production process or system procedures, follow up visits will be made to ensure the following:

- The correct identification of the root cause.
- The acceptability of the proposed corrective and preventative actions to be taken.
- The effective implementation of the proposed corrective and preventative actions.
- The sharing of defect and non-conformance details with all employees to create awareness and prevent re-occurrence.

Customer complaints will be officially recorded, reported and followed up and feedback will be given to the complainant regarding the satisfactory resolution thereof.

Control of Nonconforming Outputs Procedure shall be managed in accordance with 240-44175038.

3.18 Preventative and Corrective Action

Preventative and Corrective actions will be proposed to address findings from audits or inspections for non-conforming product, system or process.

All preventative and corrective actions shall be submitted to the originator of a non-conformance to ensure that they are submitted to the relevant specialists for acceptance. They should be checked to ensure that they address the root cause of the issue at hand.

Proposed preventative and corrective actions shall be accepted prior to implementation. Proof of implementation of these shall be kept in either contractor or Eskom files depending on relevance.

Control of Nonconforming Outputs Procedure shall be managed in accordance with 240-44175038

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3.19 Analysis of Data

Mercury MTS Expedited IPP Program - Mercury 3rd 400/132 kV transformer Project sites shall periodically analyse data from the following inputs:

- Audits Results
- Non Conformances/ Corrective Action Request
- Defects
- Management Meetings
- Ad hoc queries
- Interviews
- Technology reports
- Customer reports

The data captured shall be analysed to give an indication whether the management system is still effective and relevant, continual improvement is being achieved, the FS Fixed Diesel Generator Project Team is still effective in managing quality of the product, highlight quality risks that the Team needs to focus on e.g. Customer satisfaction, performance against target and general trend analysis.

3.20 Monitoring and Measurement

Mercury MTS Expedited IPP Program shall monitor and measure the product against the product requirements. This shall be carried out at different stages of the product realization process in accordance with surveillance or planned audit.

3.21 Audits

Internal and external audits shall be carried out as per the TPD Audit Schedule and as needed. They will be managed in accordance with 240-54313860.

4. Acceptance

This document has been seen and accepted by:

Name	Designation
Naj Moodley	Programme Manager
Puleng Tsatsi	Quality Manager

5. Revisions

Date	Rev.	Compiler	Remarks
September 2023	1	L Tau	New Document

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6. Development Team

N/A

7. Acknowledgements

N/A

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