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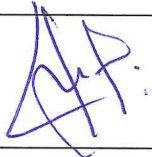


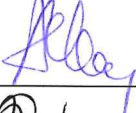

EQUIPMENT MAINTENANCE PROCEDURE

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1. INTRODUCTION

This Standard Operating Procedure describes the process used by the TNCL Engineering department to maintain equipment and measure equipment to keep them constantly in working order and to prevent incidents and production halts due to manufacturing.

This procedure is applied to all equipment in the organization and equipment that the organization considers crucial for the provision of a conformant product or service for the maintenance of equipment to ensure that all maintenance tasks are carried out efficiently and effectively and maintain a safe working environment in accordance with the requirements.

2. DEFINITION AND ACRONYMS

2.1 Definition of Terms


Table 1: Definitions of Terms.

Term	Definition
Calibration	The action or process of calibrating something such as tools and equipment.
Equipment	Including but not limited to, manufacturing and testing equipment; supplies, Materials, and documentation that which Company provides for use in providing services such as a truck, vehicle, etc.
Hazardous Materials	Substances that could harm human health or the environment. Hazardous means dangerous, so these materials must be handled the right way.
Process	A structured, measured set of tasks or activities designed to produce a specific output (service or product) for a particular customer (s).

2.2 Acronyms and Meaning

Table 2: Acronyms and Meaning.

Acronym	Meaning
HR	Human Resources
OEM	Original Equipment Manufacture
PM	The Preventive Maintenance
PPE	Personal Protective Equipment
TNCL	Tembo Nickel Cooperation's Limited

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3. PREFERENCE DOCUMENTS

- a) OEM guidelines.
- b) Technical drawings
- c) Operating Manuals
- d) Equipment Pre-start check.
- e) Forms and Inspection sheets

4. RESPONSIBILITIES

The roles and responsibilities for upholding this procedure are as follows:

I. Maintenance Technician


- a) Follow the maintenance procedure outlined in this procedure.
- b) Report any maintenance issues or concerns to the supervisor.
- c) Perform maintenance tasks according to safety standards and regulations.
- d) Document all maintenance activities and keep accurate records.
- e) Inform the supervisor of any changes or updates needed in the maintenance procedure.
- f) Ensure checklists, job cards, and inspection reports are stored, retained, and retrievable.
- g) Establish the maintenance schedules and PM for equipment.

II. Maintenance Supervisor

- a) Ensure that all maintenance workers are familiar with this procedure.
- b) Provide necessary training and resources to carry out maintenance tasks.
- c) Review and update the maintenance procedure as needed.
- d) Monitor compliance with the procedure.
- e) Address any issues or concerns raised by the maintenance workers.

III. Maintenance Superintendent

- a) Ensure the records of site inspections and equipment and infrastructure maintenance are maintained.
- b) Ensure maintenance and servicing of plant equipment takes place at the required intervals following relevant methodologies and standards where appropriate.

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- c) Maintain a log of all maintenance, servicing, and calibration of infrastructure and equipment used on the site.
- d) Coordinate and arrange maintenance, servicing, and calibration works, ensuring the work is carried out by a suitably qualified person.
- e) Ensure all plant equipment out of service or requiring maintenance is appropriately secured preventing unauthorized access or use.
- f) Ensure all plant equipment and monitoring equipment are identifiable and stored appropriately when not in use.
- g) Ensure vehicle and equipment are inspected as per the planned schedule.
- h) Annually review the need for changes to the site's existing infrastructure.

5. EQUIPMENT MAINTENANCE

5.1 Identifying Equipment

The equipment register will maintain the list of equipment where all equipment is entered. All equipment must be permanently identified by its inventory number.

The training department (under HR) with heads of department must define the need for training of employees to ensure proper and effective handling of equipment.


5.2 Equipment Maintenance and Planning

According to the list of equipment and instructions manual from the manufacturer, the Engineering department shall create the plan for preventive Maintenance of Equipment. In line with the plan, the maintenance technician creates an internal order for the spare parts if needed.

5.3 Preventive Maintenance

Maintenance technicians conduct all activities regarding preventive maintenance according to the plan for preventive maintenance of Equipment and their competence, activities that the TNCL cannot perform shall be executed by an authorized service provider.

The record of every preventive maintenance activity shall be entered into the Plan for Preventive Maintaining of Equipment by the Maintenance technician who verifies that the equipment is fit for the purpose.

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5.4 Repairing Equipment

Every employee (equipment user) who notices equipment malfunctioning is obliged to report it to the line supervisor and engineering department for repair.

5.5 Measuring Equipment Maintenance

According to the process identified, the TNCL determined the need for monitoring and measuring equipment according to manufacturer information and relevant operations control and effectiveness.


5.6 Calibration of Measuring Equipment

The owner of the process in which measuring equipment is used is responsible for specifying calibration intervals prior to use. The equipment calibration shall be performed by the authorized technician and laboratory against measurable standards traceable to international or national standards.

6. PROCEDURE

6.1 General Application


- a) The maintenance technician shall make sure that all checklists, job cards, and inspection reports are stored, retained, and retrievable.
- b) The maintenance technician shall establish the maintenance schedules for equipment such as Generators, vehicle inspections, preventive maintenance (PM), etc., and the records should be stored, retained, and retrievable.
- c) The maintenance technician has to make sure that all maintenance history (including breakdowns) of equipment is stored, retained, and obtainable when required.
- d) Daily reports, information, and feedback from the mechanics must be reported to the section Supervisor and recorded in the maintenance logs whereby actions must be taken timely.
- e) Technical feedback from Mechanics must be reviewed and challenged by the Engineering Superintendent
- f) The Engineering Superintendent shall make sure that all invoices that indicate the suppliers of critical parts and equipment such as tires, etc. stored in an appropriate location, retained, and retrievable.
- g) Equipment users must make sure that all pre-start checklists are returned to the Engineering department at the end of each shift.

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- h) All vehicle and equipment pre-start checks completed by operators/users are to be submitted to Engineering and maintenance within 24 hours.
- i) The Maintenance Supervisor must record all incidents/accidents, breakdowns, defaults of the equipment, and other daily operations events in the log.
- j) Maintenance, inspections, assessments, and records of the equipment must be stored and retained within the designated period before being disposed of.
- k) OEM guidelines, drawings, instructions, and manuals of the equipment shall be stored, retained, and retrievable always.
- l) Critical equipment such as Generators, Fuel pumps, Vehicles, etc. shall each have a folder to keep all records of specific equipment.
- m) Hard copies of records are to be stored (filed) in the maintenance technical office and shall remain retrievable when required.

6.2 Record Management

- a) Each piece of equipment or machinery shall have a maintenance log.
- b) All maintenance tasks performed, including the date, time, and details of the task will be documented.
- c) Issues or concerns raised and their resolutions the records will be kept.
- d) The maintenance reports will be submitted to the supervisor after completion.
- e) The maintenance record shall state results achieved or provide evidence of activities performed.
- f) Records shall be established and maintained to provide evidence of conformity to requirements and the effective operation of the quality management system.
- g) All maintenance records shall remain legible, readily identifiable, and retrievable.
- h) Records may be deleted or destroyed at the end of their retention period. Most maintenance documents such as audit reports, drawings, manuals, certificates, and documents are retained indefinitely.

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6.3 Managing records kept on the basis of this procedure.

Table 3: Managing Records

Record Name	Storage		Responsibility
	Retention time	Location	
List of Equipment	2 Years	Engineering Office	Eng Superintendent
Plan for PM of Equipment	2 Years	Engineering Office	Eng Superintendent
Maintenance and Calibration record	2 Years	Engineering Office	Eng Superintendent
Equipment Pre-start checklist	2 Years	Engineering Office	Eng Superintendent
Equipment and Inspection records	2 Years	Engineering Office	Eng Superintendent

6.4 Safety precautions

- Wear appropriate personal protective equipment (PPE) before starting any maintenance task.
- Ensure that all equipment and machinery are turned off and locked out before beginning maintenance work.
- Use caution signs or barricades to prevent access to the maintenance area.
- Keep the work area clean and organized.

6.5 Maintenance schedules


- A schedule for routine maintenance tasks such as inspections, cleaning, and replacements should be established.
- All maintenance tasks should be carried out as per the schedule to ensure the efficient functioning of equipment and machinery.

6.6 Maintenance Task List

- Create a list of all maintenance tasks that need to be performed.
- Prioritize the tasks based on urgency and importance.
- Assign the tasks to the maintenance workers.

6.7 Maintenance Tools & Equipment's

- Ensure that all maintenance workers have the necessary tools and equipment to perform maintenance tasks safely and effectively.
- Regularly inspect and maintain the tools and equipment.

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6.8 Maintenance Procedures

- a) Refer to the manufacturer's manual for specific instructions on maintenance procedures for each equipment or machinery.
- b) If the manual is not available, consult with the supervisor or a senior maintenance worker for guidance.
- c) Follow the step-by-step instructions and safety precautions while carrying out maintenance procedures.
- d) Refer to a specific maintenance procedure for the piece of equipment to accomplish the maintenance work.

6.9 Inspection

- a) Regularly inspect the equipment and machinery to identify any potential issues that may require maintenance.
- b) Thoroughly check for any signs of wear and tear or damage.
- c) Report any issues or concerns to the supervisor immediately.

6.10 Cleaning


- a) Keep all equipment and machinery clean to prevent any build-up of debris or dust.
- b) Use appropriate cleaning solutions and methods as recommended by the manufacturer.
- c) Avoid using water near electrical components.

6.11 Replacements

- a) Replace any damaged or worn-out parts immediately.
- b) Use only genuine parts recommended by the manufacturer.
- c) Document all replacements and keep accurate records.

6.12 Completion of Maintenance Tasks

- a) Once the maintenance tasks are completed, clean the work area and return all tools and equipment to their designated storage location.
- b) Update the maintenance schedule and log accordingly.

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6.13 Emergency Maintenance

- a) If an emergency maintenance task arises, follow the emergency procedures as set by the organization.
- b) Report the emergency maintenance to the supervisor immediately.

6.14 Disposal of Hazardous Materials:

- a) Follow proper disposal procedures for any hazardous materials used during maintenance tasks.
- b) Adhere to all regulations and laws regarding the disposal of hazardous materials.

6.15 Training and Development:

Regularly provide training and development opportunities for maintenance workers to ensure they are up to date with new equipment and maintenance procedures.

7. SYSTEM EVALUATION

This procedure shall be reviewed at least two years by members of the Engineering department and presented to the Standard Committee for approval, or when organizational changes take place or are required as part of internal and external audits. The TNCL Document Controller will monitor compliance with the document control system on an ongoing basis.

8. DISTRIBUTION


List physical locations which require a controlled copy of this document.

Table 4: Distribution

Copy	Controlled Document Folder Location
Master	Controlled Documents Central Filing System

9. CONTRAVENTION

Any breach of this procedure shall be regarded as refusal/failure to carry out a lawful instruction and will be dealt with as per the disciplinary procedure.

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10. DOCUMENT CHANGE PROCESS

The process of document change starts when the document custodian identifies there is a need to make changes within the document. The document custodian/ owner shall complete the document change request form, sign it off, and submit it to the Document Controller.

The Document controller shall issue the controlled word copy of the document to the respective document custodian/owner so that changes may be made. The document custodian/owner shall resubmit the updated document to the document controller so that the document can be controlled and updated within the Filing system ready for use by the end users.

10.1 Reason for Change

Table 5: Reason for Change

A	As a result of incidents	F	Change in training requirements
B	As a result of the audit findings	G	Results of risk assessments
C	New / changes in governance documents	H	Change due to spelling or grammatical error
D	Changes in legislation	I	New document format
E	Changes in technology	J	To integrate special instruction into the document control system

10.2 History of Change


Table 6: History of Change

Date of Change	Revision No	Revised Item (paragraph Number reference if required)	Reason Code	Name of Reviewer

11. RECORD CONTROL

Table 7: Record Control

Document Title:	Document ID:	Responsible for Maintenance:	Responsible for Filing:	Location of Storage:	Retention Period:	Method of Disposal:
Maintenance procedure	TNCL-ENG-SOP-0002	Document Controller	Document Controller	OHS Department	Hard Copy two Years	Hard copy shared file electronic

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12. DECLARATION

I hereby declare that I have taken part in the discussion of this procedure, and I understand its contents and do commit that I shall ensure compliance hereto:

	Name and Surname	Company Number	Designation / Role	Signature	Date Signed
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