Eskom	Standard	Technology

Title: **OIL SAMPLE POINT LABEL STANDARD**

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1. Introduction

Transformers and reactors are routinely oil sampled for condition monitoring and fault finding. To ensure samples are taken at the correct points, oil sampling points are labelled.

The material to be used was also identified as of utmost importance to ensure the visibility and durability of the oil sampling labels. Due to large number of transformers and reactors that are not labelled within Eskom, the team realised a need to have a Standard that will clearly specify the labels and materials to be used on oil sampling points.

2. Supporting clauses

2.1 Scope

This standard covers the technical requirements for the selection and purchase of oil sample labels fitted to Transformers and Reactors. The purpose of this document is to ensure that the requirements of these labels are standardised within Eskom during the procurement stage.

This document shall be used as a minimum requirement for the purchase and selection of oil sample labels fitted to transformers and reactors.

- Oil sample labels fitted to new Transformers and Reactors
- Oil sample labels fitted to in-service Transformers and Reactors.

2.1.1 Purpose

This document was produced to record the standardized requirements that shall be applied for labelling.

2.1.2 Applicability

This document shall apply throughout Eskom Holdings Limited Divisions.

2.2 Normative/informative references

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

[1] ISO 9001, Quality Management Systems.

2.2.2 Informative

None

2.3 Definitions

2.3.1 General

None

2.3.2 Disclosure classification

Controlled disclosure: controlled disclosure to external parties (either enforced by law, or discretionary).

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2.4 Abbreviations

Abbreviation	Description
°C	Degrees Celsius
kV	Kilo volts
L	Litres
mm/s	Millimetre per second
mm	Millimetre
MVA	Mega Volt Ampere
UV	Ultra violet

2.5 Roles and responsibilities

Not applicable.

2.6 Process for monitoring

Not applicable.

2.7 Related/supporting documents

Not applicable.

3. Requirements

3.1 General

This document serves to standardise labelling type, size, and lettering type to be used on sampling points of transformers and reactors.

This document is applicable to all oil immersed transformers and reactors within Eskom. The oil sample points of all new transformers and reactors shall be labelled according to this standard. The sample points of transformers or reactors that has been repaired at workshops or on site shall be labelled according to this standard.

To keep down the high cost and size of labels and also to help with the ease of reference, all the labels on the sampling points shall bear inscription in English only.

The lettering shall be permanent and visible. The labels fixed on the equipment must be able to withstand at least 120°C when attached to the tank and must be non-corrodible, oil and UV resistant.

3.2 Environmental Conditions

Outdoor installation

Ambient temperatures

- Maximum + 40°C
- Monthly average + 28°C
- Yearly average + 25°C
- Minimum – 10°C

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Average relative humidity 90%

Solar radiation 2500 W/m²

Atmospheric UV radiation - High

Pollution level – High marine and industrial (C5)

3.3 Corrosion Protection

Corrosion protection used shall be suitable for use in high marine and industrial polluted environments with a C5 classification.

3.4 Securing of Labels

Label fixing method shall neither penetrate the equipment housing nor constitute a potential source of corrosion. Surfaces shall be clear and wiped off effectively to ensure proper adhesion.

The labels fixed on transformers and reactors shall be within proximity of the sampling point and free from any obstruction. If the sample valves are close to each other, arrows must be used to indicate the appropriate valve. In case of doubts the guide, Appendix A shall be used in addition or alternatively a consultation with the Eskom transformer specialist shall be considered.

Labels purchased from contractors shall be supplied with double sided tape already fixed to the label. Double sided tape used shall be at least 1 mm thick high bonding type.

3.5 Label Material and Dimensions

Label Dimensions (mm)	Character size and type	Label material	Description	Label thickness (mm)	Type of adhesive material – fixed to label
170 mm wide x 30 mm high	22 pt, Arial, Bold	Printed chromadec or engraved stainless steel	Black lettering on a silver or white background	1 mm	1 mm thick high bonding double sided tape - (two strips of 12 mm wide)
All text must be in capitals and centered on the label. All labels must be supplied with adhesive material.					

3.6 Philosophy of Labelling

There is a basic philosophy to follow when labelling, this is as follows:

- Labelling shall provide positive identification of individual sampling point.
- Labelling of each transformer sampling point shall not conflict with any other labelling.
- Only the routine oil sample points (Appendix A) shall be labelled on transformers, reactors and OLTC's, unless otherwise specified. Generally, only the Buchholz and OLTC sample points shall be labelled. Other sample points may be labelled if specified by Eskom and shown in Appendix B.

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4. Authorization

The stabilisation of this document was seen and accepted by the following experts:

Name and surname	Designation
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5. Revisions

Date	Rev	Compiler	Remarks
April 2024	3	M. Hlakudi	Document stabilised with updates on corrosion and cable requirements.
Feb 2018	2	M.Ngubane	New Document revised by Gx, Tx and Gx .
Nov 2012	1	C Wolmarans	Draft document for Review created from TST 41-640

6. Development team

The following people were involved in the development of this document:

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7. Acknowledgements

Final document compiled by Generation, Transmission and Distribution

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Annex A – Routine Oil sampling points

No	SAMPLING POINT	LABEL
1)	Transformer Buchholz relay (Main 1)	TRANSFORMER ROUTINE OIL SAMPLING POINT
2)	Reactor Buchholz relay (Main 1)	REACTOR ROUTINE OIL SAMPLING POINT
3)	Three phase diverter switch sampling valve	TAPCHANGER DIVERTER ROUTINE OIL SAMPLING POINT
4)	Single phase diverter switch sampling valve	TAPCHANGER DIVERTER A PHASE ROUTINE OIL SAMPLING POINT
5)	Single phase diverter switch sampling valve	TAPCHANGER DIVERTER B PHASE ROUTINE OIL SAMPLING POINT
6)	Single phase diverter switch sampling valve	TAPCHANGER DIVERTER C PHASE ROUTINE OIL SAMPLING POINT

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Annex B – Non-routine Oil Sampling Points

No	SAMPLING POINT	LABEL
1)	Diverter conservator drain valve	TAPCHANGER DIVERTER CONSERVATOR OIL SAMPLING POINT
2)	Transformer bottom main tank valve	TRANSFORMER B.M.T. OIL SAMPLING POINT
3)	Reactor bottom main tank valve	REACTOR B.M.T. OIL SAMPLING POINT
4)	Transformer conservator drain valve	TRANSFORMER CONSERVATOR OIL SAMPLING POINT
5)	Reactor conservator drain valve	REACTOR CONSERVATOR OIL SAMPLING POINT
6)	Oil flow – cooler valve	TRANSFORMER OIL FLOW SAMPLING POINT
7)	Tap changer Selector Valve	TAPCHANGER SELECTOR SWITCH OIL SAMPLING POINT
8)	Tap changer Selector Valve	TAPCHANGER SELECTOR A PHASE OIL SAMPLING POINT
9)	Tap changer Selector Valve	TAPCHANGER SELECTOR B PHASE OIL SAMPLING POINT
10)	Tap changer Selector Valve	TAPCHANGER SELECTOR C PHASE OIL SAMPLING POINT

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