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Substation Maintenance Instruction

Miscellaneous Substation Equipment

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SUBSTATION MAINTENANCE INSTRUCTION

PRIMARY SYSTEMS

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SMI 108 MISCELLANEOUS SUBSTATION EQUIPMENT

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1.0 PURPOSE

To set the standard for the maintenance of miscellaneous substation equipment.

2.0 SCOPE

This instruction defines the minimum routine maintenance requirements for miscellaneous substation equipment, for example, surge arrestors, insulators and the like.

This instruction shall be read in conjunction with:

- Substation Maintenance Instruction SMI 100 – Minimum requirements for maintenance of transmission and zone substation equipment; and
- Substation Maintenance Instruction SMI 101 – Minimum requirements for maintenance of distribution equipment.

The routine maintenance requirement includes an inspection, overhaul, diagnostic test, and/or replacement.

3.0 REFERENCES

Company Policy (Network) 9.9.1 – Network Asset Maintenance

Company Procedure (Health & Safety) GSY 0067 – Personal Protective Equipment

Substation Maintenance Instruction SMI 100 – Minimum requirements for maintenance of transmission and zone substation equipment

Substation Maintenance Instruction SMI 101 – Minimum requirements for maintenance of distribution equipment

Substation Maintenance Instruction SMI 113 – Distribution and field transmission data asset structure and nameplate details

Substation Maintenance Instruction SMI 124 – Maintenance data entry and defect prioritisation

Substation Maintenance Instruction SMI 119 – Transmission and zone substation data asset structure and nameplate details

Electrical Safety Rules

Network Management Plan for 2011-2013

Electricity Supply Act 1995

Work Health and Safety Act 2011

Work Health and Safety Regulation 2011

AS/NZS 3760:2010 – In-service safety inspection and testing of electrical equipment

AS/NZS 3000:2007 - Electrical installations

AS/NZS 3012 – Electrical Installations – construction and demolitions sites

AS 2067:2008 – Substations and high voltage installation exceeding 1kV a.c.

AS 4398.2:2005 – Insulators-Ceramic or Glass-Station post indoor or outdoor use.

AS/NZS 60137:2008 – Insulated bushings for alternating voltages above 1000V (IEC 60137, Ed 5.0 [2003] MOD)

ENA National Electricity Network Safety Code (Doc. 01-2008)

4.0 DEFINITIONS AND ABBREVIATIONS

Authorised person

Person with technical knowledge or sufficient experience who has been approved and authorised in writing by the company to perform the function requiring authorisation as described in Schedule 1 of Company Procedure (Network) GAM 0089 – Authorisations Governance and Management. This definition is relevant to the terms, authorisation, authorise and authorised person.

Bushings

Device that enables one or several conductors to pass through a partition, such as a wall or tank, and insulates the conductor from it.

DDF

Dielectric dissipation factor

Ellipse

Endeavour Energy asset database

SDI

Substation Design Instruction

SMI

Substation Maintenance Instruction

RCD

Residual Current Device

Refer also to definitions listed in Substation Maintenance Instruction SMI 100 – Minimum requirements for maintenance of transmission and zone substation equipment and Substation Maintenance Instruction SMI 101 – Minimum requirements for maintenance of distribution equipment.

5.0 ACTIONS**5.1 General requirements**

This instruction applies to items that have not been covered in a more specific instruction, that is circuit breakers, transformers and the like. All work is to be carried out in accordance with the manufacturer's recommendations unless otherwise specified.

In special circumstances, the Network Maintenance Manager, may seek additional tests.

5.2 Routine maintenance schedules

1.0 INSPECTION
GENERAL
Inspect condition of equipment and report any defects.
PANEL LAMPS (ANNUNCIATORS)
Inspect and replace if not working.
VOLTAGE RECORDERS
Label units as <i>out of service</i> and remove fuses.
INSULATORS
Inspect for cracks, treeing, tracking, visible effects of corona.
BUSHINGS
Inspect for cracks, treeing, tracking, visible effects of corona.
WALL BUSHINGS
Inspect for cracks, treeing, tracking, visible effects of corona.
SURGE ARRESTORS

Inspect for cracks, treeing, tracking, visible effects of corona.
CABLE BOXES
Inspect for compound leaks, or other defects.
CONTROL PANELS
Inspect for faulty wiring, connections, or other defects.
BUSBARS/CONDUCTORS/CONNECTIONS
Inspect condition.
LIGHTNING MASTS
Inspect condition.
RCD (<i>Residual Current Device</i>)
Perform push button test using in-built test function. Testing shall be conducted in accordance with AS/NZS 3760:2010.
2.0 MINOR OVERHAUL
BUSHINGS
Clean porcelain and carry out DLA test if DDF test points are available. Doble hot collar test if DDF point is not available.
WALL BUSHINGS
Clean porcelain and carry out DLA test if DDF test points are available. Doble hot collar test if DDF point is not available.
INSULATORS
Clean porcelain in heavily polluted areas.
LIGHTNING MASTS
Check electrical connections.
Check for signs of corrosion.
3.0 DIAGNOSTIC TEST
BUSBARS/CONDUCTORS/ELECTRICAL CONNECTIONS
Diagnostic test using infrared thermometry and rectify if a defect is found.
CONTROL PANELS
Diagnostic test using infrared thermometry and rectify if a defect is found.
RCD (<i>Residual Current Device</i>)
Perform an operating time test using external RCD tester. Testing shall be conducted in accordance with AS/NZS 3760:2010. Results shall be recorded in Ellipse.
4.0 REPLACEMENT
SURGE ARRESTERS
Replace as indicated in Substation Maintenance Instruction SMI 100 – Minimum requirements for maintenance of transmission and zone substation equipment

6.0 AUTHORITIES AND RESPONSIBILITIES

Chief Engineer has the authority and responsibility for approving this Substation Maintenance Instruction.

Primary Systems Manager has the authority and responsibility for making recommendations to the Chief Engineer in respect to this Substation Maintenance Instruction.

Network Maintenance Manager has the authority and responsibility for the content of this Substation Maintenance Instruction and its relevance.

Regional Transmission/Distribution Managers have the authority and responsibility for:

- overseeing that Endeavour Energy employees engaged to perform the work have appropriate qualifications and are competent to carry out the work;
- monitoring reactor equipment at transmission and zone substations so that they are maintained to the requirements of this instruction and Substation Maintenance Instruction SMI 100 – Minimum requirements for maintenance of transmission and zone substation equipment; and
- providing appropriate equipment and training.

All Endeavour Energy employees and/or contractors have the authority and responsibility for:

- conducting themselves in a manner that meets the requirements of this Substation Maintenance Instruction and Substation Maintenance Instruction SMI 100 – Minimum requirements for maintenance of transmission and zone substation equipment;
- working in accordance with local and statutory requirements;
- managing public safety so that it is not compromised; and
- working in accordance with Endeavour Energy's Electrical Safety Rules.

7.0 DOCUMENT CONTROL

Documentation Content Coordinator : Network Maintenance Manager

Documentation Distribution Coordinator : Branch Process Coordinator