

Title: **INSTALL/REPLACE SURGE
ARRESTORS (UP TO AND
INCLUDING 33KV)**

Unique Identifier: **34-313**

Part **11 - Maintenance**

Area of Applicability: **Distribution Engineering**

Documentation Type: **Task Manual**

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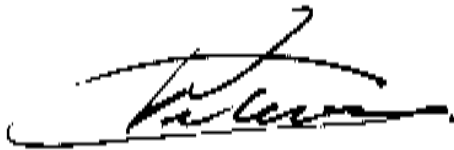
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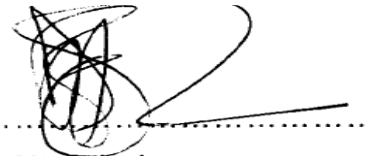


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Officer Field Services

Date: 30/03/2012

Approved by (SCOWT SC Chairperson)

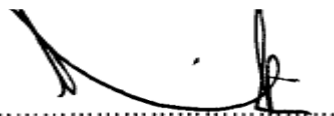


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INSTALL/REPLACE SURGE ARRESTORS (UP TO AND INCLUDING 33KV)Unique Identifier: **34-313**Type: **DMN**Revision: **1**Page: **3 of 12****Foreword**

The document was compiled to conform or align with NRS 082 and OHSAct requirements in ensuring that equipment in our network are maintained to ensure that the equipment's life span is maximized and maintenance and operating is done under safe conditions.

Revision history

This revision cancels and replaces revision no 0 of document no. **DWN_34-313**.

Date	Rev.	Compiled By	Clause	Remarks
May 2012	1	P Pretorius D Ntombela	-	Reformatted the document. No content changes Document number changed to DMN 34-313
Sept 2006	0	P Pretorius	-	Original issue as 34-313

Authorisation

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INSTALL/REPLACE SURGE ARRESTORS (UP TO AND INCLUDING 33KV)

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Introduction

This task manual was compiled from the **analysis** that was done on **critical tasks** that are being performed when maintaining network equipment to identify **risks and hazards** attached so that they could be **addressed or remedied**.

This document states the procedure of INSTALLATION/REPLACE SURGE ARRESTORS UP TO AND INCLUDING 33kV thereby ensuring that work is performed safely and risks and hazards are minimised.

Keywords

Manual, Network, Arrestors, Hazards, Document, Equipment and Procedure

Bibliography

Equipment Manufacturer's manual.

1 Scope

1.1 Purpose

The purpose of this document is to provide persons INSTALLING OR REPLACING SURGE ARRESTORS UP TO AND INCLUDING 33kV with a step by step description of how to do the task, including the most critical hazards and technical specifications associated with the task.

1.2 Applicability

This Task manual is applicable to persons working INSTALLING OR REPLACING SURGE ARRESTORS UP TO AND INCLUDING 33kV in Eskom Holdings (Pty) Limited, it's divisions or Eskom wholly owned subsidiaries.

1.3 Roles and Responsibilities

The designated person or his delegate shall ensure that this procedure is implemented and adhered to. The authorised / responsible person is responsible for the safe execution of all work and activities as set out in this procedure.

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2 Normative / Informative references

Parties using this document shall apply the most recent edition of the documents listed below:

2.1 Normative References

OHSAct: *Occupation Health and Safety Act 85 of 1993 and Regulations;*

DST_34-658: Rev 0, *The use, care, maintenance and testing of high voltage operating sticks*

EPC_34-846: Rev 0, *Operating Regulations for High Voltage systems;*

DST_34-1710: Rev 0, *Provision and Use of Personal Protective Equipment;*

DISASABW3: Rev 2, *Distribution Standard On Fall Arrest Systems;*

DPC 34-227: Rev 0, *Pre-task planning and feedback process;*

DPC 34-380: Rev 0, *Identifying, Analysing, Documenting and Observing Dangerous/Hazardous tasks;*

DPC 34-444: Rev. 0, *Procedure for the application and maintenance of portable earth's;*

DST_34-1454: Rev 0, *Clearing and maintenance of servitude routes;*

DST_34-1150: Rev 0, *Lifting machine operators training;*

DPC_34-908: Rev. 0, *Procedure for Barricading;*

SCSPVACL6: Rev 0, *Procedure For Using A Fall Arrest System;*

Specific operating local instruction / procedure; *and*

Manufacturer's manual.

2.2 Informative

DST_34-1005: Rev. 0, *Environmental management policy; and*

DPC_34-04: Rev 0, *Procedure For The Preparation And Administration Of Distribution Standards.*

3 Definitions and abbreviations

3.1 Definitions

All definitions in EPC_32-846 and OHSAct 85 of 1993 including the following are applicable:

Task Analysis: The systematic examination of all dangerous/hazardous tasks (work) in order to identify and quantify all the potential and existing inherent hazards that employees are exposed to while the tasks are being executed.

Risk Assessment: This process involves the combined functions of hazards identification, risk analysis, risk evaluation, determining the risk control strategy/s and the identification of the risk control measures that will be implemented during the task execution.

Dangerous/hazardous task: A specific element of work, which has produced and/or which possesses the potential to produce major loss or harm to people, assets, processes/production and/or the environment when performed properly.

Directive: A document which sets out a management objective, the appropriate policy if deemed necessary, as well as the functional accountability for activities to achieve that objective and the interface between functions affected by, or responsible for the execution of, such activities.

3.2 Abbreviations

CDP: Career Development Programme;

PTO: Principal Technical Officer;

STO: Senior Technical Officer;

TO: Technical Officer; and

CCC: Change Control Committee

4 Requirements

4.1 Tools and Equipment

- a) Standard tool set;
- b) Aerial Device;
- c) Ladders;
- d) Torque wrench;
- e) Loop impedance tester; and
- f) Earth Resistance tester.

4.2 Personal Protective Equipment

All personal protective equipment shall be in accordance with DST_34-1710.

4.3 Work execution

4.3.1 Pre-Job Planning

- a) Assessment to determine the scope of work and the resources that would be required:
 - People;

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- Equipment;
 - PPE;
 - Tools; and
 - Material / Spares
- b) Determine the cause of loss, upgrade/down grade, cable fault etc
- c) Planning work and resources

4.3.2 Risk Assessment

NOTE 1: Ensure that light/lighting sufficient before the commencement of work.

NOTE 2: Ensure that task analysis of HV operating, Work With/On Extension/Single Ladders and Operating a vehicle mounted crane with a bucket is also applicable.

- a) Ensure that all members of staff are included when performing risk assessment.
- b) Conduct an on site risk assessment prior to commencement of work and continuous during the task execution by:
- identify the existing hazards/risks.
 - treat, transfer, tolerate or terminate the identified risks.
 - ensure that all workers acknowledge identified risks and hazards by signing risk assessment form / worker's register.

4.3.3 Maintenance

4.3.3.1 Plant status

NOTE 1: All steps as identified in analysis of HV Operating is applicable.

- a) Ensure that plant is isolated and earthed.
- b) Ensure that plant is handed over (works permit) where required in accordance with ORHVS

4.3.3.2 Removal of Faulty Surge arrester

NOTE 1: All steps as identified in analyses of working with and on extension/single ladders and operating of a aerial device / vehicle mounted crane is applicable

NOTE 2: Ensure that measures are put in place to avoid / stop tools, equipment and material from falling.

NOTE 3: All steps as identified in analysis of operating a Vehicle Mounted Crane/Aerial Device is applicable.

- a) Position and secure ladder/bucket
- b) Place tools and equipment (snatch block and rope) in pouch
- c) Climb ladder/raise aerial device to working position, using fall arrest system according to procedures
- d) Secure snatch block.

- e) Disconnect electrical connections
- f) Loosen the surge arrestor and lower to ground.

4.3.3.3 Installation of Surge Arrestor

NOTE 1: Ensure that installation is in accordance with specifications

NOTE 2: Ensure that all electrical connections are properly secured (bolting/crimping)

NOTE 3: Falling equipment and tools on workers standing under person working in elevated position.

NOTE 4: All steps as identified in analyses of working with and on extension/single ladders and operating Secure snatch block rope to surge arrestor.

- a) Lift surge arrestor to attachment point and secure
- b) Check, clean and reconnect all electrical connections, and ensure that are secure and sound.
- c) Inspect installation to ensure that installation is in accordance with OHS&A and approved specifications.
- d) Remove all tools and equipment and decent to ground level.
- e) Remove ladder from pole or lower aerial device.
- f) a vehicle mounted crane is applicable

4.3.3.4 Re-energise

NOTE 1: All steps as identified in analysis of HV Operating is applicable

NOTE 2: Ensuring that plant is re-energised in accordance with ORHVS

NOTE 3: Ensure that all earthing gear is removed from plant

- a) Hand back plant and re-energised in accordance with ORHVS

4.3.4 Task Wrap up

- a) Remove all personnel, equipment and redundant material from site
- b) Complete and submit required documentation
- c) Ensure that GPS coordinates are captured or corresponds with the existing ones.

5 Forms and Records

A capacitor bank faults / failure report / feedback shall be completed and forwarded to the Plant Department and Work Management Centre together with the work order via Works co-ordinator.

Annex A - Impact assessment

(Normative)

1 Guidelines

- All comments must be completed.
- Motivate why items are N/A (not applicable)
- Indicate actions to be taken, persons or organisations responsible for actions and deadline for action.
- Change control committees to discuss the impact assessment, and if necessary give feedback to the compiler of any omissions or errors.

2 Critical points

2.1 Importance of this document. E.g. is implementation required due to safety deficiencies, statutory requirements, technology changes, document revisions, improved service quality, improved service performance, optimised costs.

Comment: Statutory requirements and document revision.

2.2 If the document to be released impacts on statutory or legal compliance - this need to be very clearly stated and so highlighted.

Comment: The procedure in this document shall complied to so as to minimize the risk of being electrocuted.

2.3 Impact on stock holding and depletion of existing stock prior to switch over.

Comment: NONE.

2.4 When will new stock be available?

Comment: NOT APPLICABLE.

2.5 Has the interchangeability of the product or item been verified - i.e. when it fails is a straight swap possible with a competitor's product?

Comment: NOT APPLICABLE.

2.6 Identify and provide details of other critical (items required for the successful implementation of this document) points to be considered in the implementation of this document.

Comment: Document DPC_34-444 is required when implementing this document.

2.7 Provide details of any comments made by the Regions regarding the implementation of this document.

Comment: (N/A during commenting phase)

Annex A

(continued)

3 Implementation timeframe

3.1 Time period for implementation of requirements.

Comment: AS per Change Control Committee and Field Services schedule.

3.2 Deadline for changeover to new item and personnel to be informed of DX wide change-over.

Comment: The document has just been revised and there are no changes.

4 Buyers Guide and Power Office

4.1 Does the Buyers Guide or Buyers List need updating?

Comment: NO.

4.2 What Buyer's Guides or items have been created?

Comment: NONE.

4.3 List all assembly drawing changes that have been revised in conjunction with this document.

Comment: NONE.

4.4 If the implementation of this document requires assessment by CAP, provide details under 5

4.5 Which Power Office packages have been created, modified or removed?

Comment: NONE.

5 CAP / LAP Pre-Qualification Process related impacts

5.1 Is an ad-hoc re-evaluation of all currently accepted suppliers required as a result of implementation of this document?

Comment: NOT APPLICABLE.

5.2 If NO, provide motivation for issuing this specification before Acceptance Cycle Expiry date.

Comment: NOT APPLICABLE.

5.3 Are ALL suppliers (currently accepted per LAP), aware of the nature of changes contained in this document?

Comment: NOT APPLICABLE.

Annex A

(continued)

5.4 Is implementation of the provisions of this document required during the current supplier qualification period?

Comment: NOT APPLICABLE.

5.5 If Yes to 5.4, what date has been set for all currently accepted suppliers to comply fully?

Comment: SEE 5.4.

5.6 If Yes to 5.4, have all currently accepted suppliers been sent a prior formal notification informing them of Eskom's expectations, including the implementation date deadline?

Comment: SEE 5.4.

5.7 Can the changes made, potentially impact upon the purchase price of the material/equipment?

Comment: NO.

5.8 Material group(s) affected by specification: (Refer to Pre-Qualification invitation schedule for list of material groups)

Comment: NOT APPLICABLE

6 Training or communication

6.1 Is training required?

Comment: YES

6.2 State the level of training required to implement this document. (E.g. awareness training, practical / on job, module, etc.)

Comment: Practical / on job training is required.

6.3 State designations of personnel that will require training.

Comment: Senior Supervisor, PTOs, STOs and TOs.

6.4 Is the training material available? Identify person responsible for the development of training material.

Comment: YES.

6.5 If applicable, provide details of training that will take place. (E.G. sponsor, costs, trainer, schedule of training, course material availability, training in erection / use of new equipment, maintenance training, etc).

Comment: Safety and Maintenance training.

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Annex A

(continued)

6.6 Was Technical Training Section consulted w.r.t module development process?

Comment: YES.

6.7 State communications channels to be used to inform target audience.

Comment: Training Department and training forums

7 Special tools, equipment, software

7.1 What special tools, equipment, software, etc will need to be purchased by the Region to effectively implement?

Comment: NONE.

7.2 Are there stock numbers available for the new equipment?

Comment: NOT APPLICABLE

7.3 What will be the costs of these special tools, equipment, software?

8 Finances

8.1 What total costs would the Regions be required to incur in implementing this document? Identify all cost activities associated with implementation, e.g. labour, training, tooling, stock, obsolescence

Comment: Comment: No costs other than the training costs will be incurred by the regions and this will depend on the arrangements made for training ie. Training is held regionally or nationally

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Impact assessment completed by:

Name: David Ntombela_____

Designation: Consultant_____