

	<b>Task Manual</b>	<b>Technology</b>
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## 1. Introduction

The document was compiled to comply with the Occupational Health and Safety (OHS) Act (0 OHS Act No. 85) and 0 NRS 082 requirements and to document the tasks procedure for OPERATING A VEHICLE MOUNTED CRANE to ensure that maintenance tasks are carried out in a safe manner

This Task Manual is compiled to formalize the task steps for OPERATING A VEHICLE MOUNTED CRANE to be carried out by distribution Business on behalf of Eskom Distribution Division. The document includes the latest updates in information, format, safety precautions from the task analysis to that the task are carried out in a safe manner.

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**.

## 2. Supporting Clauses

### 2.1 Scope

#### 2.1.1 Purpose

- a) The purpose of this task manual is to standardize the procedure followed when performing "OPERATING A VEHICLE MOUNTED CRANE" task.
- b) The purpose of this document is also to provide persons carrying out "OPERATING A VEHICLE MOUNTED CRANE" with a step by step description of how to do the task, including the most critical hazards and technical specifications associated with the task.

#### 2.1.2 Applicability

This task manual shall apply throughout Eskom Holdings Limited, its divisions, subsidiaries and entities wherein Eskom has a controlling interest.

### 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

##### 2.2.1.1 South African National Document(s)

Document number	Document title	Preparer/author	Revision or date of issue
OHS Act No. 85	Occupational health and safety act and regulations	-	1993
NRS 082	Recommended maintenance policy for electricity networks	Eskom	Latest

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2.2.1.2 Eskom National Document(s)

Document number	Document title	Preparer/author	Revision or date of issue
EPC_32-93	Vehicle and driver safety management	Eskom	Latest
EPC_32-846	Operating regulations for high voltage systems	Eskom	Latest
EPC_32 829	Wildlife interaction guideline (draft)	Eskom	Latest

2.2.1.3 Eskom divisional document(s)

Document number	Document title	Preparer/author	Revision or date of issue
DGL_34-256	Scheduling of driving activities	Eskom	Latest
DISASABW3	Standard for a fall arrest system	Eskom	Latest
DST_34-1150	Lifting machine operators training;	Eskom	Latest
DST_34-445	Standard For The Use Of Equipotential Earth Footplates;	Eskom	Latest

2.2.1.4 Informative references

Document number	Document title	Preparer/author	Revision or date of issue
32-9	Definition of Eskom documents	Eskom	Latest
32-644	Eskom documentation management standard	Eskom	Latest
474-65	Operating manual of the Steering Committee of Wires Technologies (SCOWT)	Eskom	Latest
DST_34-1462	Standard for the care, use, inspection and maintenance of conductive and non-conductive ladders	Eskom	Latest
DST_34-1710	Provision and use of personal protective equipment	Eskom	Latest
DPC_34-380	Identifying, analyzing, documenting and observing tasks according to criticality	Eskom	Latest
DPL_32-727	Safety, health, environment, and quality (SHEQ) policy	Eskom	Latest
DPC_34-925	Procedure for refusal to work on the grounds of health, safety and environmental concerns;	Eskom	0

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Document number	Document title	Preparer/author	Revision or date of issue
DPC_34-227	Pre-task planning and feedback process	Eskom	0
DPL_34-1005	Environmental management policy	Eskom	0
CDP TO 087:	Module for equipontential earthing	Eskom	0
-	Task Critical task analysis: Operating vehicle mounted crane with bucket.	Eskom	0

## 2.3 Definitions

### 2.3.1 General

All definitions listed in recognised industry glossaries such as NRS 000, ORHVS and IEV are applicable.

Definition	Explanation
<b>Dangerous/hazardous task</b>	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.
<b>Directive</b>	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.
<b>Risk assessment</b>	This process involves the combined functions of hazards identification, risk analysis, risk evaluation, determining the risk control strategy/strategies and the identification of the risk control measures that will be implemented during the task execution.
<b>Task analysis</b>	The systematic examination of all dangerous/hazardous tasks (work) in order to identify and quantify all the potential and existing inherent hazards to which employees are exposed while the tasks are being executed.
<b>NOTE:</b> Only persons who have satisfied the designated person on terms of the Occupational Health and Safety Act (Act 85 of 1993) (General Machinery Regulation 2(1)) that their knowledge is adequate to perform specific duties on specified plant and that their knowledge of these regulations is sufficient may be authorised.	

### 2.3.2 Disclosure Classification

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

## 2.4 Abbreviations

Abbreviation	Explanation
<b>CAP</b>	Committee for Accepted Products
<b>LAP</b>	List of Accepted Products

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Abbreviation	Explanation
OHSA	Occupational Health and Safety Act
PPE	Personal Protective Equipment
SHE	Safety, Health and Environment
TSO	Technical Services Official
PTO	Principal Technical Official
STO	Senior Technical Official
TO	Technical Official
CCC	Change Control Committee
SWL	Safe Work Load
ORHVS	Operating Regulations for High Voltage Systems
P.t.o	Power take off

## 2.5 Roles and Responsibilities

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

## 2.6 Process for Monitoring

Document number	Document title
-	Process Control Manual (PCM) for Execute Work.
DPC_34-04	Procedure For Management Of Technical Documents For SCOT.

## 2.7 Related/supporting Documents

Document number	Document title
-	Driver / Lifting machinery Operator Authorization;
-	Critical task analysis; and
-	Training module.

### 3. Requirements

#### 3.1 Pre-planning

##### 3.1.1 Tools and Equipment

- a) Earthing Equipment (where applicable).
- b) Vehicle mounted crane.

##### 3.1.2 Personal Protective Equipment

All Personal Protective Equipment (PPE) shall be in accordance with DST\_34-1710 as well as PPE identified from the risk assessment (DPC\_34-227) performed.

#### 3.2 Task Execution

##### 3.2.1 Safety and Preparation

- a) Ensure that where long distances are travelled when going to a work site, preparations are done and the guidelines given in DGL\_34-256 and EPC\_32-93 are observed.
- b) Ensure that the crane remote control is always hanging around the operator's neck when is being used and if not in use, must be placed inside the cab of the truck.

##### 3.2.2 Work Instruction

###### 3.2.2.1 Pre-job Planning

**NOTE 1:** Ensure that job planning is done properly so that job pressure is avoided or does not become a factor when performing a risk assessment before task commencement or continuously during task execution in accordance with the prescribed procedure.

**NOTE 2:** When one lacks knowledge of the area, environment, equipment, etc special care should be taken when performing the pre-task planning.

**NOTE 3:** Ensure that the load to be lifted will not exceed the safe working load of the crane.

**NOTE 4:** Ensure that the vehicle is inspected and tested: controls / levers, indicators, labels for functionality and legibility.

**NOTE 5:** Ensure that the appropriate PPE and safety equipment are identified, inspected and worn/used during execution of the task.

**NOTE 6:** Ensure that the person / driver to drive the truck, operate the crane or aerial device and to rig or sling the load is trained, competent and authorised to perform the task.

- a) Do an assessment at the site to determine the scope of work and the resources that would be required (people, equipment, PPE, etc.)– also to determine the cause of loss, upgrade / down grade, cable fault etc.
- b) Plan work and resources required for the task.

###### 3.2.2.2 On-Site Risk Assessment

- a) Conduct an on-site risk assessment prior to commencement of work and continuously during the task execution.

**NOTE 1:** When doing an on-site risk assessment and executing the task the following hazards must be addressed.

**NOTE 2:** Ensure that critical existing hazards/risks relating to the task correctly identify, minimised and or removed where possible.

**NOTE 3:** Poor visibility due to insufficient light/lighting may result in poor judgements being made which will lead to damages being caused equipment and staff getting injured etc.

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**NOTE 4:** Ensure that safety clearances to live high voltage equipment are adhered to (can make contact and result in damage and injuries)

**NOTE 5:** All types of communication – language, instructions, signals, documents etc must be made available.

- Ensure that there is sufficient light/lighting during the task execution.
  - Identify the existing task associated hazards/risks.
  - Develop measures to minimise and / or mitigate identified hazards/risks.
  - Ensure that appropriate PPE and safety equipment is inspected and worn/used during execution of the task.
  - Confirm the validity of mobile equipment authorisation before commencement of task.
  - Identify measures against tools, equipment and material that can fall from the crane.
  - Ensure proper communicating ability – language, instructions, signals, etc during work or emergencies.
- b) Do not take short cuts to save time.

### **3.2.2.3 Operating vehicle mounted crane**

**NOTE 1:** Ensure sufficient light/lighting at the work site where necessary.

**NOTE 2:** Ensure that safety clearances to live high voltage equipment are adhered to (can make contact and result in damage and injuries)

**NOTE 3:** Presence of public at work site may be hazardous to workers and public (material failure)

**NOTE 4:** Ensure that no work commences without risk assessment/instruction been given by person supervising the task or before permit to work has been issued and instruction has been given by authorised person supervising the task or performing task without ensuring that plant has been isolated and earthed and handed over (works permit) where required in accordance with ORHVS (EPC\_34-846).

**NOTE 5:** Ensure that the vehicle is positioned in such a manner that work and the crane manoeuvrability can be performed / achieved without any difficulty.

- a) Inspect and test the vehicle and all the operating levers / controls again to ensure good or correct functionality before positioning the vehicle and lifting the load.
- b) Position the Vehicle at the Work Site and ensure to apply brakes when the vehicle has stopped.

**NOTE 6:** Ensure that wheels are always wedged / stopped with appropriate blocks always when stationary and where the soil is unstable the outriggers shall be supported with correct blocks before attempting to lift the load.

- c) Position wedge / stop block correctly on the wheels.
- d) Place the support block on the identified position for the outriggers where necessary.

**NOTE 7:** Operation of crane with a bucket close to Live Apparatus above a 1000V where working clearance can be encroached into, the apparatus must be Open Isolated and Earthed, (permit issued) in accordance with ORHVS.

**NOTE 8:** When task is to be performed in conjunction with equipotential earthing standard or in close proximity to overhead line, the vehicle shall be bonded to cluster bar, earth electrode or in the substation to the earth mat.

**NOTE 9:** Where VMC is used in close proximity with live network ensure that a footplate is used, forms part of equipotential zone and all metal parts shall be bonded to earth.

**NOTE 10:** People standing within 2m of the earth electrode (can be electrocuted if contact with high voltage is made due to step potential).

- e) Position the Equipotential Earthing Footplate and connect the bonding earth to the earth electrode / cluster as per approved procedures and standards (where applicable).

**NOTE 11:** Tools, equipment and material falling down from crane may cause injuries and damage to equipment.

**NOTE 12:** Ensure that the outriggers are extended fully, safety pins are correctly in position and are correctly supported.

**NOTE 13:** If tilt up outriggers are installed on the vehicle caution must be exercised when lowering the outrigger legs

**NOTE 14:** Ensure that sufficient manpower is used when extending the outriggers

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f) Engage the PTO and stabilize the vehicle by fully extending the outriggers.

g) Apply safety pin and ensure that the outriggers are supported where necessary.

**NOTE 15:** When outriggers are to be lowered ensure that the soil is stable and the area is clear of foreign objects and people standing in the way of the outriggers and ensure that in case of a poor visibility the outriggers are properly barricaded or indicated.

h) Position the base plate (if not fitted) before lowering.

**NOTE 16:** Operator must ensure to stand with both feet on the footplate (where applicable) before operating the crane.

i) Unfold the boom and position it correctly above / at the load.

**NOTE 17:** Use rigging attachments on equipment where fitted and fit slings on correct places on equipment without rigging attachments to lift any equipment.

**NOTE 18:** Ensure that the load and the crane operator assistant giving lifting instruction are clearly visible to the crane operator at all times, any condition or circumstances.

**NOTE 19:** Always ensure that loading is done in accordance to the SWL chart.

j) Secure and rig the load.

k) Give instruction to any person around the load to stand clear of the load.

**NOTE 17:** When lifting the load and the crane operator must ensure that he /she can clearly see / observe what he / she is doing and he / she can clearly hear / communicate with people on at the work site if not a trained (signs) crane assistant must be used to guide crane operator with hand signals to ensure a safe execution of the work.

l) Lift the load up and position / place it where appropriate.

m) Lower the crane further and detach the rigging equipment from the load.

n) Fold the boom to stow position.

**NOTE 18:** Ensure that the outriggers are fully retracted and secured with extension locks and the jack additional footplates must be removed and stored appropriately before driving off.

o) Retract the outriggers to stow position, apply safety pin and disengage the p.t.o.

p) Remove and store the jack additional footplates where applicable.

q) Remove the VMC from the work site.

#### **3.2.2.4 Task Wrap Up**

**NOTE 1:** Ensure that work site is cleaned after completion of the task.

a) Remove all personnel, equipment and redundant material from the worksite in accordance with statutory and organizational requirements.

b) Complete and submit the required documentation.

## **4. Forms and Records**

The completed inspection checklist report shall be returned to the Senior Supervisor / PCO / TSPO and where necessary a copy thereof shall be sent to Fleet Management.

a) Daily Crane check list;

b) Crane Test Certificate;

c) Vehicle check list;

## 5. Authorization

This document has been seen and accepted by:

Name and surname	Designation
Prince Moyo	Power Delivery Engineering GM
Colin Smith	Design Base Maintenance Manager
Sebastian Pasquallie	SCOT/SC Chairperson
Joe Steenkamp / David Ntombela	OTS / Consultant

## 6. Revisions

This revision (240-77858652) cancels and replaces all revisions of document no. DMN\_34-110.

Date	Rev. no.	Compiler	Remarks
Aug 2014	1	David Ntombela / Joe Steenkamp	Reviewed and reformatted the document an it is published as DMN_240-77858652
Nov 2009	1	JJN Steenkamp	Document approved as DMN_34-110
			Included Foreword and revised the Introduction section
			Revised Normative and informative references
			Removed Implementation Date
			Removed Process for monitoring
			Reformatted the document and Replaced the Impact Analysis with new
Jan 2006	0	JJN Steenkamp	Original issues as DMN_34-110

## 7. Development team

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

Name	Designation	Department/OU
D M Ntombela	Consultant	PDE DBO
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M Lakhan	Officer Technical Support	KZN OU
D LeRoux	Officer Technical Support	WC OU

## **8. Acknowledgements**

Not applicable.

## 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 and optimised costs.**

Comment: Statutory requirements and or document revisions.

**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: No impact on statutory or legal compliance and this is only document revisions.

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

Comment: N/A - No new equipment or item need to be acquired for implementation of this document.

**2.4 When will new stock be available?**

Comment: N/A –see 2.3 above

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

Comment: N/A – No changes made and also see 2.3 above

**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: N/A – The document was only revised.

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

Comment: None

### 3. Implementation timeframe

**3.1 Time period for implementation of requirements.**

Comment: N/A – No technical changes were made to this document

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

Comment: None

### 4. Buyers Guide and Power Office

**4.1 Does the Buyers Guide or Buyers List need updating?**

Comment: Yes

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

Comment: White locks and keys specification.

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

Comment: N/A.

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

Comment: N/A – The revision requires no new equipment / assessment

**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: NO

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

Comment: N/A – The document doesn't specify but stipulated the maintenance procedures on the existing equipment.

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

Comment: The document hasn't changed and the addition will be communicated when the white locks and keys are ordered.

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

Comment: Yes – The changes in the document requires no evaluation as the document currently being implemented covers the current product or service until the new product is ordered.

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

Comment: N/A – see 5.4 above

**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: N/A – see 5.4 above

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

Comment: N/A – Not on the current material.

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

Comment: N/A – No impact on the current material.

**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 and training module

**6.3 State designations of personnel that will require training.**

Comment: Technicians, Senior Technician, Senior Supervisor and Engineers / Technologist, TO, STO, PTO etc.

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

Comment: N/A

**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: N/A.

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

Comment: No.

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

Comment: 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: N/A – No new equipment is required

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

Comment: N/A – No new equipment is required.

## **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: N/A.

Impact assessment completed by:

Name: David M. Ntombela

Designation: Consultant