



**DALMIA CEMENT (B) LIMITED – CEMENT PLANT
ARIYALUR
ELECTRICAL MANUAL**

Issue No:02	Rev. No: 00	Effective Date: 01.11.2019	SOP/Elect /019
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Issued By:	Approved By: : HOD – ELECTRICAL
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SOP For Substation (Switch Yard) Maintenance

Scope : This Procedure is to establish and ensure safe Maintenance Practices in Substation

Responsibility : Section Engineer – Electrical

Accountability : **Section** Head-Electrical

PPE:

1. Safety helmet
2. Safety shoe
3. Rubber Gloves
4. Safety Belt
5. Nose Mask

Tools:

1. Insulated tools
2. Air Blower
3. Screw Driver
4. Cutting-Plier
5. Discharge Rod
6. Spanner set
7. Test Lamp
8. Fuse Puller
9. Ladder

Hazard Analysis:

Risks associated

Electrical shock
Fall from Height
Electrocution (Fatal)
Electrical Flash
Electrical Fire

Mitigating Measures

Use of insulated tools
Use of Ladder
proper discharging methods
Safety belt



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Training needs:

1. Usage of tools and Nature of Hazards
2. Usage of PPEs

Procedure:

1. Take the LOTO permit as per ELEC/SOP/001 and work permit.
2. Switch off the 110kV circuit breaker in the yard.
3. Open the switch yard incoming isolator while opening use PPEs like hand gloves and close the earth switch of the isolator.
4. Connect Discharge Rods in each phase.
5. Place the Ladder to approach Insulators & Buses.
6. Check & Ensure the Ladder is locked for that position.
7. Wear safety belt and climb up in ladder.
8. Clean the all insulators, bushings, CTs, PTs lightning arresters, Isolators and Breakers with cloth while cleaning, use PPEs like Nose mask, Hand Gloves, Goggles and Safety belt.
9. Clean the Isolator contacts and apply petroleum jelly.
10. Clean the on line tap changer control panel and transformer marshalling box with blower while cleaning, use PPEs like Nose mask, Hand Gloves, Goggles and Safety belt.
11. Check the tightness of all CT and PT connections with proper tool while checking, use PPEs like safety belt.
12. Check the connection tightness of Transformer marshalling box and On line tap changer control panel.
13. Check the all power connection in the switch yard with proper tools.
14. Check and clean the circuit breaker local control panel with hand blower / cloth.
15. Clean the neutral grounding resistor, neutral isolating switch with hand blower, cloth while cleaning use PPEs like nose mask and goggles.



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16. check and tight (if required) the power and control connections of the neutral grounding resistor, neutral isolating switch while tightening use proper tools.
17. Remove the grass in the switch yard while removing takes care about insects.
18. Check the body earthing connection of all equipments.
19. Check the earthing connection of the lightening arrestor and transformer neutral earthing.
20. Remove Ladder and place in storage place.
21. Remove Discharge Rods.
22. Normalize the Isolators & Earth switches.
23. Clear the LOTO permit as per ELEC/SOP/002.
24. Clear the Work permit.

Emergency / Emergency Shut OFF:

1. If electrical shock injury or body injury is there, give First aid and inform to the Safety department or Call Emergency number 3108/9865152222/9750963761.

Records/Annexure:

1. JSA is enclosed below.
2. LOTO Permit

JOB SAFETY ANALYSIS: (JSA)

Job Safety Analysis	Job: Substation Maintenance	Date:	Analysis by:	Reviewed by:
Title of employee doing job: Electrician & Contract	Supervisor: Section Engineer	Department: Electrical	Section: Plant	Approved by:



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Employee				
Reqd./recommended PPE: Safety helmet, Safety shoe, Safety Belts & Rubber Gloves.				
Sequence of Basic Job Steps	Potential Hazards	Recommended Safe Job Procedure	What Could Go Wrong	Corrective Action
Switch Off & Isolation	Electric Shock	Use Tested Electrical Rubber Hand Gloves	Partial opening of Isolator switches / Control circuit failure	Proper Switch off & Isolation methods
			Hand gloves may damaged	Periodic replacement
Maintenance Activities	Electric shock due to un-discharged components	Proper Discharging methods	Live circuit / Usage of Improper tools	Proper discharge methods & permanent connection of Discharge rods during Maintenance
	Body injury	Wear safety helmet, safety shoes , hand gloves	Tools and material may fall on human body	Without PPE don't perform the job
Insulators cleaning	Fall from Height	Use Good condition Ladder	Slip from ladder/ Damage ladder	Usage of proper ladder / IS approval Ladder
		Use safety belt/ Check belt condition before use	Not wearing safety belt/Not checked belt condition.	Ensuring proper lock arrangement/ Height work training/Use IS approval safety belt