JSW SCPL, BAWAL

STANDARD MAINTENANCE PROCEDURE

ACB/VCB Maintenance

STANDARD OPERATING PROCEDURE

SOP Title:	**ACB/VCB Maintenance**	**Date of Revision**	**3rd December, 2024**
Document Issue Date	**15th March, 2023**	**Revision No**	**02**

Document Issue and Revision History

Date	Revision Number	Change Summary
1ST February, 2023	01	Format Standardization
3rd December, 2024	02	JSW SOP/SMP Format Standardization

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Signature	
Position	Deputy Manager

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Signature	
Position	Manager

Title:	ACB/VCB Maintenance	
Linked to Risk Assessment:	Yes	Location: Plant

1.PURPOSE:

To establish a standardized procedure for the operation, inspection, and maintenance of Air Circuit Breakers (ACBs)/Vacuum Circuit Breakers (VCBs) in electrical systems to ensure safe and reliable operation.

2.SCOPE:

This SOP applies to all ACBs/VCBs in the electrical distribution system. It includes procedures for inspection, testing, cleaning, lubrication, and component replacement.

4.RESPONSIBILITY:

The following employees are responsible to implement this procedure while working at ACBs/VCBs -

- Section In-charge
- Shift In charge/Supervisor

Reference

- 6Hi-mill Electrical manual

Definitions

4.PPE REQUIREMENT

PPE: Mandatory	PPE:	Special PPE:
Insulated Gloves Arc Flash Suit Earplugs Rubber Insulating Boots	Safety Helmet	Reflective Jacket

5.EMERGENCY ACTION:

IN EMERGENCY DAIL NUMBERS	
Security: 1599	**Ambulance: 1515**
Hospital: 1555	**Safety : 1546**
Telephone operator:	

Emergency Switch Location	Intercom Number	Emergency Response Team
Main Office		
CCL		
CGL-1		
Sub Station		
Mill & Pickling		
2 CGL-2 / Finishing		
RLNG GAIL Station		
ETP /ARP		

6.OH&S AND ENVIRONMENT HAZARDS

OH&S Hazards:	1. CONTROL MEASURES IN OPERATION:
The most common hazards are: • Falls on Same Level • Slippery surface • Exposure to respiratory system • Exposure to High-Frequency Sound Waves • Electric Shock	**The control measures in Operation are:** • Wear arc flash-rated PPE (face shields, suits, gloves). • Ensure proper training for personnel in handling electrical hazards. • Perform regular maintenance checks to identify faulty equipment. • Use proper insulation and grounding.
Environment Hazards:	**Control Measures in Operation:**
• Land contamination	• Preventive Maintenance of ACB/VCB as per SAP scheduling

6.PROCEDURE:

- Switch off the ACB/VCB by using the manual trip mechanism or the electrical control switch.
- Ensure the power supply to the breaker is turned off
- Isolate the feeder circuit to which the ACB/VCB is connected
- Place a lockout device on the breaker and associated disconnecting switch to prevent accidental re-energization.
- Place a warning tag indicating the breaker is under maintenance.
- Confirm zero energy state at all points before starting maintenance work.
- Check for physical damage, cracks, or signs of overheating on the breaker housing, covers, and components.
- Check for any corrosion, loose connections, or overheating signs at the terminals and bus bars.
- Clean terminals with non-conductive tools and check the tightness of connections.
- Apply an anti-corrosive compound if necessary, to ensure good contact.
- Ensure there is no dust, dirt, or moisture buildup on or around the ACB/VCB.
- Clean the area using a soft cloth or compressed air.
- Check the operating mechanism for smooth movement and correct alignment
- Look for any signs of binding or wear in the mechanism, such as the springs, pins, and levers.
- Lubricate moving parts as per the manufacturer's recommendations (e.g., operating springs).
- Inspect the main contacts, arcing contacts (for ACBs), and vacuum interrupters (for VCBs Inspect the vacuum interrupter for cracks or damage that might lead to leakage) for any signs of wear, pitting, or discoloration.
- Clean contacts if necessary, using dry clothes or contact cleaner (avoid abrasives that could damage surfaces).
- Ensure contacts are properly aligned and free from any obstructions.
- Ensure the trip mechanism operates correctly and verify that there are no sticking parts or corrosion.
- Manually test the trip function (not involving live circuits).
- Check the auxiliary contacts for wear or damage.
- Clean any dust or debris from auxiliary contacts.

- Inspect all auxiliary relays and control circuits for proper connection and operational integrity.
- Verify that the shunt trip, under-voltage release, and other auxiliary components are functioning correctly.
- Tighten any screws or bolts that were loosened during maintenance
- Once the maintenance is complete and all checks have been performed, remove the lockout/tagout devices in accordance with your facility's procedures.
- Reconnect the ACB/VCB to the power supply
- close the breaker and verify normal operation, ensuring that there are no unusual sounds or behaviours.
- Perform a final visual inspection to ensure everything is in place

7.ENVIRONMENTAL INSTRUCTIONS / CONSIDERATIONS

Prevention of waste contamination of ground and water courses/ Arrest Spillages:

- Any **damaged or worn components**, such as contacts, seals, or insulating materials, should be properly disposed of in accordance with local environmental regulations.
- **Recyclable materials**, such as metals or plastics, should be separated from hazardous waste for recycling.
- **Avoid spillage** of these substances during maintenance and use appropriate **spill containment procedures** if needed.

Dealing with waste:

- When cleaning finishes, always ensure that wastes are not left on floor but cleaned up immediately with water if it is reusable and not left for someone to clean.
- Always leave the area clean after work completion.

8.DOCUMENTATION & ENCLOSURES:

- No enclosures

In the event of an emergency such as, you feel unwell; proceed to a safe area and Immediately contact/report to your supervisor.

9.SAFETY RULE REMINDERS

The following rules must always be adhered to when carrying out these tasks:

1. **ALWAYS** Maintain high standard of housekeeping at workplaces.
2. **ALWAYS** ensure you are always wearing the full appropriate Personal Protective Equipment that are required for the activity.
3. **ALWAYS** use 3 points of contact when climbing into or out of any piece of plant equipment / ladders.
4. **ALWAYS** stick to the designated walkways to and from work area.
5. **Never** work or travel below suspended load.

UNUSUAL CIRCUMSTANCES OR DEVIATION FROM NORMAL ROUTINE DETAILED IN THIS WORK INSTRUCTION MAY REQUIRE AN ALTERNATIVE METHOD OF WORK TO BE CONSIDERED AND A NEW RISK OR EXISTING RISK ASSESSMENT AMENDED TO REFLECT THE CHANGE. THE ASSESSMENT MAY BE A FORMAL WRITTEN ASSESSMENT AS PER THE PERMIT TO WORK REQUIREMENT. IF IN DOUBT REGARDING THE ABOVE CONTACT YOUR SUPERVISOR FOR FURTHER GUIDANCE.

Prepared By:	**Approved By:**
Date:	Date:

Record of significant changes:

Note of Significant change	Approved by	Date
Initial Release	**HOD**	

TRAINING ATTENDANCE SHEET / RECORD:

SR	NAME	DESIGNATION	SIGN
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TRAINER :……
DATE & TIME :……..

PLEASE NOTE: By signing this form, you sign to agree that you understand the method of work prescribed in this document and agree to always adhere. You are aware about the risk & safe work instructions/procedures for doing this type of activity, also explained to you in your local language. **Do not sign the form if you are not sure about the risks & any aspect of the SOP**– Ask your Supervisor for additional information.