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MAINTENANCE PLANNING

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Standard Tactical Work: Station DC Supply Inspection (Battery Bank and Charger)

APPLICATION

This document serves to record the intended generic description of the inspection and testing undertaken by Secondary Plant of Sub Station DC Supply Battery Bank and Chargers on City Power's network. **It is imperative that this content is reviewed 3 Year Basis.** Such reviews will facilitate the customization for specific equipment to ultimately optimize the tactical work executed

Interval: 2 Monthly

Tactics development committee

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DOCUMENT CONTROL INFORMATION

Effective from	Version Number and Amendment Details	Nature of the Change	Amended By	Reviewed By	Approved By
January 2017	Rev 0 • New document	None	M Roy	E Higgins	D Govender
May 2021	Rev 1 • Changed from monthly to every 2 monthly • Change the document name from Battery bank and charger inspection and testing to Station DC supply Maintenance (Battery bank and charger) • Tool Section; Removed: ○ Broom with wood handles ○ Squeegee with wooden handle ○ Hose pipe • NICAD Cells Section: ○ Removed record SG level of each cell (Attached sheet) • Lead Acid Cells Section: ○ Removed check the electrolyte with hydrometer General Editing	Major	M Moloto	E Higgins	E Higgins
November 2023	Rev 2 • None	None	M Roy	E Higgins	A Mudau

Abbreviations

PP	:	Primary Plant
SP	:	Secondary Plant DC System
Risk	:	Risk Control
BNW	:	Building and Works
PPE	:	Personal Protective Equipment
ORHVS	:	Operating Regulation for High Voltage Systems
ACDB	:	Alternating Current Distribution Board
DCDB	:	Direct Current Distribution Board

All	:	City Power staff & Contractor staff
DC	:	Direct Current
AC	:	Alternating Current
SG	:	Specific Gravity
E/L	:	Earth Leakage
PB	:	Lead
PBO ₂	:	Lead Peroxide
H ₂ SO ₄	:	Sulphuric Acid
H ₂ O	:	Water
PBSO ₄	:	Lead Sulphide

System Condition	:	Live
Estimated Time	:	1 hour
Electricians	:	1
Technician	:	1
Assistants	:	1

Typical Pictures of Battery Chargers and Battery Banks (Lead Acid and NicaD)



Station DC Supply Maintenance (Battery Bank and Charger Inspection)	Responsible Personnel	To be ticked by Responsible Person		
		Yes	No	N/A
TOOLS AND EQUIPMENT				
Take your substation key with you	SP			
Volt Meter.	SP			
Hydrometer	SP			
Thermometer	SP			
Insulated spanners	SP			
Plastic refill bottles	SP			
Paper toweling	SP			
Demineralised water	SP			
Soda ash solution	SP			
Petroleum jelly	SP			
Non sparking brushes	SP			

Plastic water bucket	SP			
Nylon brushes	SP			
Battery log book	SP			
Station DC Supply Maintenance (Battery Bank and Charger Inspection)	Responsible Personnel	To be ticked by Responsible Person		
		Yes	No	N/A
Battery Conductance Tester	SP			
Schematic Diagrams (Hard Copy/Electronic)	SP			
Relevant Manuals (Hard Copy/Electronic)	SP			
SAFETY				
Report to System Control before entering live enclosure	SP			
Responsible official in charge must be ORHVS qualified	SP			
Risk assessment must be undertaken and completed	SP			
PPE must be worn by all in attendance	SP			
All officials must observe rules applicable to working in a live enclosure	SP			
Open all doors for ventilation	SP			
Use equipment for NiCad battery use only	SP			
Use equipment for Lead acid battery use only	SP			
GENERAL				
Check for evidence of occupation	SP			
Check for evidence of vandalism	SP			
Check that designations are clear, legible and permanent	SP			
Check if the Battery Room is clean inside	SP			
Check locking mechanisms if they are in working condition	SP			
Check the working condition of doors and hinges in battery room	SP			
Check battery room warning sign	SP			
Check “NO DRINKING WATER” sign	SP			
Check “NO OPEN FLAMES” sign	SP			
Check first aid signs if they are clear, legible and permanent.	SP			
Check fire procedure signs if they are clear, legible and permanent.	SP			
Check for flame proof light fitting report to the relevant department	SP			
Check for running water	SP			
Check for good condition of louver in door	SP			
Check for good condition of wall louvers	SP			
Check battery stand / cabinet for defects	SP			
Check the electrolyte level on batteries	SP			
Check the ACDB designation for the charger supply	SP			
Check the DCDB designations for the DC Supplies	SP			

Check the DC Selection panel (DC Main and DC Backup)	SP			
Check for signs of leaking batteries	SP			
Check for corrosion on battery connections and terminals	SP			
Station DC Supply Maintenance (Battery Bank and Charger Inspection)	Responsible Personnel	To be ticked by Responsible Person		
		Yes	No	N/A
Re-coat terminals with petroleum jelly	SP			
Clean up any electrolyte which may have spilled	SP			
Wipe battery casings with paper toweling	SP			
Ensure details relating to each battery is correctly captured	SP			
Record all defects and abnormalities of batteries	SP			
Check that the extractor fan is working	SP			
CHARGER				
Isolate charger to check AC failure alarm	SP			
Check if control has received alarm	SP			
Check for any loose connections within the charger	SP			
Check boost function / normal function on charger	SP			
Check that float charge settings are within limits	SP			
Check that boost charge settings are within limits	SP			
Check Alarm lights	SP			
Check terminals on charger for corrosion	SP			
Check volt meter operation	SP			
Check Amp meter operation	SP			
Check the plug circuit outlet condition to the charger	SP			
NICAD CELLS				
Check cell temperature	SP			
Check and clean batteries	SP			
Check for loose connections on each cell	SP			
Check battery filler caps are closed and secure	SP			
Record the voltage of each battery (Attached sheet)	SP			
Check the overall voltage	SP			
Check the terminals on cells for corrosion	SP			
Check if the cable is attached firmly to cells	SP			
LEAD ACID CELLS				
Check the temperature of pilot cell	SP			
Record the voltage of each cell (Attached sheet)	SP			
Record the SG level of each cell (Attached sheet)	SP			
Check the overall voltage of the bank	SP			
Check the terminals on cells for corrosion	SP			

Check if the cable is attached firmly to cells	SP			
Station DC Supply Maintenance (Battery Bank and Charger Inspection)	Responsible Personnel	To be ticked by Responsible Person		
		Yes	No	N/A
FINAL CHECKS ON SITE				
Clear the site and remove all tools.	SP			
Report any abnormalities within the battery room to the relevant team leader	SP			
Before leaving the battery room report back to System Control	SP			
Sign off and clear everyone	SP			
Lock the battery room	SP			

Comments: -----

Responsible Official Name: -----

Responsible Official Signature: -----

Date: -----

BATTERY CHARGER INSPECTION SHEET

Date of inspection

Battery Manufacturer

Overall battery voltage: _____ V

Overall charger current: _____ A

Substation name:

Battery type and size:

Pilot cell temperature: _____ C

No	SG	Voltage	No	SG	Voltage	No	SG	Voltage
1			31			61		
2			32			62		
3			33			63		
4			34			64		
5			35			65		
6			36			66		
7			37			67		
8			38			68		
9			39			69		
10			40			70		
11			41			71		
12			42			72		
13			43			73		
14			44			74		
15			45			75		
16			46			76		
17			47			77		
18			48			78		
19			49			79		
20			50			80		
21			51			81		
22			52			82		
23			53			83		
24			54			84		
25			55			85		
26			56			86		
27			57			87		
28			58			88		
29			59			89		
30			60			90		

Have batteries been cleaned? YES/NO Did the batteries need topping up? YES/NO Litres _____.

Have charger alarms been tested locally? YES/NO Charger Make: _____.

Have charger alarms been tested to SCADA? YES/NO Type: _____.

Have adjustments been done to charger? YES/NO Serial No: _____.

What has been adjusted? _____.

Reason for adjustment? _____.