



Bangladesh Power Development Board
INTEGRATED MANAGEMENT SYSTEM
(BASED ON ISO 9001:2015, ISO 14001:2015 & ISO
45001:2018 STANDARDS)

PROCEDURE FOR CENTRAL EQUIPMENT REPAIR SHOP



INTEGRATED MANAGEMENT SYSTEM

Document No.:
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Revision No.: 00

PROCEDURE FOR CENTRAL EQUIPMENT REPAIR SHOP

Effective Date: 01-11-2021

Page 2 of 8

1.0 Purpose

- To Standardize the maintenance works of Transformers for effective operation of Sub-Station which stand out as an indispensable component affecting quality stability and reliability of power System
- To establish effective meter testing to ensure reliable metering process
- To ensure quality transformer oil for reliable transformer operation.

2.0 Scope

Applies to Integrated Management system of Bangladesh Power Development Board (BPDB)

3.0 Terms and Definition

Definition

None

Abbreviations

BPDB – Bangladesh Power Development Board
MR – Management Representative
CERS – Central Equipment Repair Shop

4.0 Roles and Responsibility

Tasks in Reference Clause nos.	Responsibility
5.0, 5.1	Head of the Field Office, Xen-1 & 2, Repair Group Foreman and Supervisor
5.2	Xen-1 & 3,
5.3, 5.4, 5.5	Head of the field Office, SE & Xen-3,
5.6	SE

5.0 Procedure

Plan

5.1 Procedure for Transformer repair in CERS

- From field offices of BPDB/others public or private sector faulty/defected Transformers are sent to CERS with requesting letter for repair
- After getting clearance from security section faulty/defected Transformers are given job number.
- After entry in store, Transformers are distributed to groups by lottery or priority basis.

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BPDB-IMS-PR-057

Revision No.: 00

PROCEDURE FOR CENTRAL EQUIPMENT REPAIR SHOP

Effective Date: 01-11-2021

Page 3 of 8

- Other than BPDB, Transformers bill prepared after inspection and given respective Offices.
- Repair groups identify defects of Transformers by Primary test with the help of High Voltage Section,
- After identifying defects, Transformers are dismantled and required repair works i.e. cleaning, welding, rewinding with new/old wire ' as required is done.
- After completion of repair works, X-formers re-assembled and send to high voltage section for intermediate test. If the test result is satisfactory then transformers are sent to heat chamber for heating. If the test result is not satisfactory transformers are sent to respective repair groups for further inspection/repair as required. After repair Transformers again send to high I voltage section for test. If OK then send to heat j chamber for heating. Repeat the cycle until j satisfaction.
- After 2 days heating, transformers are removed from heat chamber and insulation resistance is measured. If it is up to satisfaction level then transformers are assembled and filling with tested oil then send to high voltage section for final test. If it is not up to satisfaction level then it is again send to respective section and report the cycle until satisfaction.
- In high voltage section assembled transforms are tested finally. If final test is up to satisfaction level then it is send to painting section for paint if final test is not up to satisfaction level then it is send to respective group for further. Inspection/repair as required. Repeat the cycle until satisfaction
- After painting work transformers are kept in yard for delivery
- authorization letter is provided by the BPDB/Private/Public offices requesting for repaired transformers
- Transformers are given to authorized person sent by respective offices

5.2 Procedure for Transformer in high voltage lab

- After receiving transformers from field offices of BPDB/Public Organizations primary test lone by high voltage section Firstly insulation resistance test and then individual HT/LT coil ire tested applying voltage
- if individual test is Ok then ratio test and short circuit (load) test are done. If oil is Ok then ratio and short circuit test result found up to acceptable level then transformers are sent to
- If in Primary test, individual cot! test Is riot found ok then transformers are sent to repair groups,
- After repair transformers are sent to high voltage section for individual HT/LT coil test by I single Phase applied voltage and ratio test and I short circuited test by 3 Phase applied voltage, if test is ok then transformers are sent to heat chamber for heating. If test is not ok then transformers are sent back to repair groups.
- After heating and oil filling, transformers are finally tested for insulation resistance, ratio test, no load test, load test and high voltage withstand test. If the test is ok then transformers are sending to auxiliary section for delivery. If

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PROCEDURE FOR CENTRAL EQUIPMENT REPAIR SHOP

Document No.:
BPDB-IMS-PR-057

Revision No.: 00

Effective Date: 01-11-2021

Page 4 of 8

test is not ok then transformers are sent to repair groups for further checking.
Repeat the cycle until satisfaction

5.3 Procedure for meter testing in CERS

- From different offices of BPDB and others public/private organizations meters are sent to CERS for test with requesting letter.
- After getting clearness from security section, general section received the requesting letter and entry into register.
- After completing office procedure, meter section entries into record book and prepared bill.
- After received meter by meter section, number is given of this sample meter.
- Bill is then prepared according to rate schedule of BPDB
- Customers then pay bill by pay order or bank draft.
- The relevant tests for each job are then performed in our electrical testing lab using the expiating test sets
- After tests are performed, Test report is prepared using the prescribed test report format,
- After completion the test. all records are put into the format reporting and documentation:
- Meters are return to the person authorized from respective office with reports.

5.4 Procedure of oil testing Laboratory

- From field offices of BPDB and others public or private organizations oil samples are sent to, CERS for testing with requesting letter
- After getting clearance from security section. general section received the requesting letter and entry into register
- After receiving oil samples, oil is sent to oil testing laboratory
- After received oil, work order no is given for each job.
- Bill is then prepared according to rate schedule of BPDB,
- Customers then pay bill by pay order or bank draft
- The relevant tests for each job are then performed in our oil testing lab using the existing test sets.
- After tests are performed. Test report is prepared using the prescribed test report format
- After completion the test, all records are put into the format for reporting and documentation.
- Test report is given to the authorized person of the respective office

5.5 Procedure for testing Electrical Equipment's in Electrical Testing lab

- Faulty or new electrical equipment samples such as CT/PT, Lightning Arrester, MCCB, Isolator, Insulator, ACR etc. from BPDB offices/private firms

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PROCEDURE FOR CENTRAL EQUIPMENT REPAIR SHOP

Document No.:
BPDB-IMS-PR-057

Revision No.: 00

Effective Date: 01-11-2021

Page 5 of 8

are sent to CERS with a requesting letter to perform the tests according to their requirements

- Clearance is taken from the security section before the samples are received in our electrical testing lab.
- After the samples are received, we issue a work order Number for each job.
- Bill is then prepared according to the schedule of BPDB.
- BPDB offices/private firms then pay the bill through Bank Draft or Pay order
- The relevant tests for each job are then performed in our electrical testing lab using the existing test sets
- After tests are performed, Test report is prepared using the prescribed test report format
- Authorization letter is provided by the BPDB offices/ private firms requesting for the test report along with the samples.
- Then the samples are delivered back to them along with the test report after clearance from the security section.

5.6 Internal Audit & Review

- Procedure for Central Equipment Repair Shop is reviewed and checked during internal audits.
- The audit findings will be placed before Managements Review Committee meeting along with the recommendation for improvement.
- Actions are taken on the basis of evaluation.

5.7 Environmental Aspect, Impact & Controls

Any activity at the plant, whether it is carried out for ensuring quality of service or meeting requirement of the interested parties, there will be some environmental aspects associated with it. It is a requirement of the IMS of BPDB to identify those environmental aspects, evaluate their impact and determine necessary controls.

While carrying out the activities and operation, the employees of BPDB need to exercise appropriate and predetermined controls so as to prevent or mitigate any adverse impact that may be associated with the activity or the process.

Some examples of environmental aspects associated with the Procedure for Central Equipment Repair Shop are as below:

SI Nos.	Aspect	Impact	Controls
1.	Transformer Oil Disposal	Soil pollution	1. Work and dispose as per the chemical disposal plan
2.	Use of Chemical	Soil / Water Pollution	1. Work and dispose as per the chemical disposal plan 2. Provide Necessary

Prepared By		Approved By	
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PROCEDURE FOR CENTRAL EQUIPMENT REPAIR SHOP

Document No.:
BPDB-IMS-PR-057

Revision No.: 00

Effective Date: 01-11-2021

Page 6 of 8

			Training
3.	Packaging Disposal	Waste Generation	1. Follow the waste management plan
4.	Paper Use	Natural resource depletion	1. Reuse of Paper with the blank side
5.	Chemical Filled Cloth (Jute)	Water / Soil Pollution	1. Follow the waste management plan
6.	Sludge from tanks	Soil pollution	1. Follow the waste management plan
7.	Electrode disposal	Soil pollution	1. Follow the waste management plan
8.	Carbon Powder - Soil Pollution	Soil pollution	1. Follow the waste management plan
9.	Water bearing chemical discharged from radiator	Soil / Water Pollution	1. Discharge as per 'Effluent water Quality' guidelines

The table above provides examples only. The IMS team of each site needs to identify the aspect impact and controls related to specific activities and ensures that the environmental performance of the organization is effectively maintained. For this purpose, the procedure “Environmental Aspect Impact Assessment Procedure” is to be followed and forms “Environmental Aspect Impact Register” is to be filled up by the IMS team.

5.8 OHS Hazard, Risk & Controls

Any activity at the plant, whether it is carried out for ensuring quality of service or meeting requirement of the interested parties, there will be some occupational hazards with it related to the occupational health and safety (OHS) to the workers and employees. It is a requirement of the IMS of BPDB to identify those OHS hazards and determine necessary controls.

While carrying out the activities and operation, the employees of BPDB need to exercise appropriate and predetermined controls so as to prevent or mitigate any adverse consequence that may be associated with the activity or the process.

Some examples of OHS hazards and with the Procedure for Central Equipment Repair Shop are as below:

SI Nos.	OHS Hazard	Controls
1.	Failure of PTW Process	1. Provide Necessary Training 2. Active Supervision of activity
2.	Wrong Use of tools	1. Provide Necessary Training 2. Active Supervision of activity

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PROCEDURE FOR CENTRAL EQUIPMENT REPAIR SHOP

Document No.:
BPDB-IMS-PR-057

Revision No.: 00

Effective Date: 01-11-2021

Page 7 of 8

3.	Wrong use of Lifting equipment	<ol style="list-style-type: none"> 1. Provide Necessary Training 2. Active Supervision of activity. 3. Maintain adequate PPE whilst at worksite
4.	Dropped object	<ol style="list-style-type: none"> 1. Provide Necessary Training 2. Maintain adequate PPE whilst at worksite
5.	Fall	<ol style="list-style-type: none"> 1. Provide Necessary Training 2. Maintain adequate PPE whilst at worksite
6.	Expose to Chemicals	<ol style="list-style-type: none"> 1. Provide Necessary Training 2. Maintain adequate PPE whilst at worksite
7.	Entrapment	<ol style="list-style-type: none"> 1. Provide Necessary Training 2. Active Supervision of activity. 3. Maintain adequate PPE whilst at worksite
8.	Cold Burn	<ol style="list-style-type: none"> 1. Provide Necessary Training 2. Maintain adequate PPE whilst at worksite
9.	Chemical Burn	<ol style="list-style-type: none"> 1. Provide Necessary Training 2. Maintain adequate PPE whilst at worksite 3. Maintain adequate housekeeping
10.	Manual Handling	<ol style="list-style-type: none"> 1. Provide Necessary Training
11.	Electric Shock	<ol style="list-style-type: none"> 1. Ensure a Permit to Work is issued as per guidance before personnel is sent for work 2. Maintain LOTO Procedure 3. Maintain adequate PPE whilst at worksite
12.	Wrong Startup	<ol style="list-style-type: none"> 1. Alarm 2. Ensure a Permit to Work is issued as per guidance before personnel is sent for work
13.	Improper re-assembly of equipment	<ol style="list-style-type: none"> 1. Provide Necessary Training 2. Active Supervision of activity
14.	Noise	<ol style="list-style-type: none"> 1. Staff must wear Earmuff whilst at worksite
15.	Heat Stress	<ol style="list-style-type: none"> 1. Provide Necessary training 2. Schedule proper work plan

The table above provides examples only. The IMS team of each site needs to identify the OHS hazards and necessary controls related to specific activities and ensures that the environmental performance of the organization is effectively

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Document No.:
BPDB-IMS-PR-057

Revision No.: 00

Effective Date: 01-11-2021

Page 8 of 8

maintained. For this, the procedure Hazard Identification and Risk Assessment Procedure is to be followed and Hazard Identification and Risk Assessment Register is to be filled up by the IMS team.

6.0 References

None

7.0 Appendix

None

8.0 Revision History

SI No.	Revision Number	Section	Change Made	Date of Revision

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