DAKSHIN HARYANA BIJLI VITRAN NIGAM

Instruction No. 52/MON/2011

From

Coordinator,
DHBVN, Hisar

To

All CGMs/GMs/DGMs/AGMs
Under DHBVN.

Memo No:-**Ch-10/MON-260/Vol-II** Dated:- **28.04.2011**

Subject: Implementation of Safety Measures under DHBVN to avoid accidents.

As per prevailing instructions the safety measures are required to be adopted in the field during Operation & Maintenance of LD system to avoid electrical accidents, the same are in force since erstwhile HSEB in accordance to the provisions of Indian Electricity Rules. The Safety Manual stands published and are available. The DHBVN has issued repeated instructions for their proper implementation of all safety measures contained in the safety manual. The training to the field staff is however being arranged by the Nigam in its own training centers so as to familiarize staff with safety aspects to minimize the accidents. But it has been observed that the safety measures contained in the safety manual are not being followed in the field, resulting in that the electrical accidents both fatal & non fatal are occurring in the field.

The status of occurring fatal/ non fatal accidents have been reviewed by the management and it has been observed that as per existing instructions the practice of clearing safety code test by the technical officers/officials have taken a back seat and no weightage/ consideration is being given at the time of their promotion, whereas, it is mandatory to clear the Safety Code Test for AEs/JEs/AFMs.

Keeping in view the above lapses in the existing system it has been decided by the management that for proper knowledge of the Safety Manual instructions to the field officials, scheduled training programme shall be introduced for the field staff regularly after a specified interval. The exams be conducted on completion of training and each official shall have to pass the test, otherwise training completion certificate shall not be issued. All AEs/JEs/AFMs shall pass the Safety Code written test which shall be conducted at head office level. A column for mentioning the status of the passing of Safety Code shall also be introduced in the ACR form of the officer/official. The Safety Code test shall also be linked to the

annual increment and promotion as fixed with regard to accounts examinations for AEs.

In case the Safety Code exams as per instructions are not being cleared by the technical officer/ official then their name for promotion shall not be considered. All the CGMs/GMs shall ensure that the Safety Code Exams have been cleared by all technical officers/officials working under them.

The following norms /scheduled are hereby fixed for the same.

1. **Training to field officials**.

   One time training to each ALM/LM after every two years shall be provided at Nigam's own training centers. The written exam on completion of training be conducted. All officials appearing in training will have to pass the test.

   For AEs one time training for safety code shall be mandatory. The training shall be at Nigam's own training centers preferably at Gurgaon. All AEs shall have to pass the written test to be conducted at training centers.

2. **For Promotion/ Annual increment**:

   All AEs/JEs/AFMs shall pass the safety code test within two years from the date the joining, otherwise their case for promotion/ release of increment shall not be considered.

3. **Test Conducting Authority**:

   The test shall be conducted centrally by CGM/Commercial at Head office level.

To minimize the possibilities of occurrence of accidents it has also been decided to add the following additional safety guidelines in the existing Safety Manual.

1. **Execution of New Works.**

   The new installations should be properly laid as per IE Rules. Minimum clearances between the lines, ground and buildings, shall be maintained strictly as per IE rules. The line should be charged only after clearance from the Chief Electrical Inspector. Minimum clearances between the lines, ground and buildings, as per IE rules are given in the Safety Manual.

2. Presence of Regular staff at Work Place:

   At least one trained regular employee of the Nigam of the rank of JE/AFM should always associate the temporary staff/contractor personnel's working on the job. Sanctioned strength should be increased so that work pressure on the field staff is reduced and the area under their charge is manageable for speedy disposal of work/complaints. It is observed that SDO/JE/AFM are

rarely present at site and only junior staff carry out the work without proper supervision. This practice should be avoided.

3. Marking of Name of Feeders:

On the feeding end substations, every feeder should be provided with name of feeder, danger plates etc. in Hindi.

4. Proper T&P:

Complete and good quality T&P needs to be provided and should also be updated periodically. The sub divisions shall be provided with the hydraulic trolleys and use of helmets with induction censors be made mandatory before climbing on the poles. In addition to the regular T&P, every field JE/JE-I should be provided with at least one earth tester, Megger, Earthing sticks and adequate lineman safety belts, for the field staff under his control.

5. Safety Audit:

Safety Audit should be carried out by the designated safety department of Nigam after regular intervals. Recommendation of the Safety audit team be taken care of while writing annual Q.R. of the employees. This safety Audit Team as constituted by WTD of the Nigam.

6. Sketches of Electrical Network:

Sketches of lines/feeders need to be displayed at the substations/ Complaint centers with full details such as line crossings, circuit switches, location of DTs with capacity etc.

7. Double Circuit Supplies:

Painted indications with name of feeder in Hindi on every pole be mentioned, where more than one supply/feeder is existing, specifically in the Urban area. In case of L.T., no double supply should be there on any pole, if it is unavoidable, proper warning should be displayed. The earth wire shall never be used as return path in a single phase supply system.

8. Proper Maintenance of the G.O.Switches:

Heavy duty GO switches should be provided on the DTs/line sections. Proper inventory should be maintained in the stores of the Nigam and no DT should be installed without GO switch. Proper maintenance of GO switches should be carried out and its proper working should be ensured by SDO/XEN (in some of the cases, any phase of the GO switch remains connected on the disconnection of GO switch, which become cause of accident).

9. Proper procedure to take PTW:

Prescribed system for taking Permit to Work (PTW) is not being followed strictly leading to safety hazards. Although for maintenance proper PTW is being taken from the substations, but for attending day to day faults, shortcut is being used and supply is got disconnected on the phone by the JE/AFM and not being properly monitored by the JE/AFMs, which have caused accidents in past, this should be avoided.

10. Proper Guarding of the Lines:

Guarding should be provided specifically where crossing lines are over other lines, roads & buildings after maintaining proper clearances as per IE rules. The same has been given in safety manual.

11. Temporary Earthing:

While doing the work on the line, it should be ensured that there is proper earthing on both sides of the system by using earthing wire/stick, where work is being carried out and workman should use safety belt.

12. Proper Maintenance of the Electrical System:

The maintenance of the system should be carried out regularly as per schedule.

13. Recording of the value of earth resistance of various equipments:

Attached as per Annexure A

14. Guidelines for proper laying of Consumer Installation and LD system:

Attached as per Annexure B

15. Guidelines/instructions to be followed for safety of Workman

Attached as per Annexure C

16. Insulating Mats:

Only high quality insulating mats at all substations shall be used. The mats should be ISI marked and conform to ISS: 15652. The insulating mats shall not be accepted unless type test certificates of ERDA, Vadodara are submitted by the firms, as recommended by CEI, Haryana vide his office memo NO.8192-95/CC dated 17.11.2009. Compliance of the instructions of CEI is being done in newly proposed sub stations but the same should also be complied on existing sub stations.

CGM/P&D will take action in this regard.

The above guidelines in addition to the existing safety manual instructions shall be implemented with immediate effect. For its wide publicity in the field, the version of above guidelines in Hindi & English be circulated /distributed to all the technical officers/officials under DHBVN by head of the wings /offices. All officers/ officials shall go through the above guidelines in addition to the existing instructions contained in the Safety Manual. The doubt if any shall be cleared through their senior officers OR training center of their areas.

The authority for conducting the Safety Code Test for AEs/JEs/AFMs shall be Chief Engineer, Commercial at head office level. The test shall be conducted twice in a year (after every six months). The officers/ officials shall furnish their request through proper channel for appearing in the examinations. The dates for Safety Code Test shall be circulated by the Chief Engineers well in advance. The written examination shall be conducted and evaluated and result be declared as is being done in case of passing the accounts exams.

It shall be ensured that above instructions are complied with meticulously with immediate effect.

This issues with the approval of MD, DHBVN

DA/Annexure-A,B,C

Coordinator,
DHBVN, Hisar

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Copy of the above is forwarded to the following for information please:-

1. SPS to MD, DHBVNL, for kind information of MD please.
2. SPS to Director (OP), DHBVNL for kind information of Director please.
3. SPS to Director/Projects, DHBVNL for kind information of Director please.
4. SPS to Advisor/O&F, DHBVN for kind information of Advisor please.
5. CGM/HR&Admn., DHBVNL, Hisar
6. CGM./P&D, DHBVNL, HIsar.
7. CGM/MM, DHBVNL, Hisar.
8. CGM/Commercial, DHBVNL, Hisar.
9. CGM/Finance, DHBVNL, Hisar.
10. CGM & CAO/MM, DHBVN, Hisar.
11. CGM/Audit, DHBVNL, Hisar.
12. CGM/Accounts, DHBVNL, Hisar.
13. GM/M&P, DHBVN, Gurgaon.
14. DGM/IT, DHBVNL, Hisar. He is requested to incorporate the same on DHBVNL, Web site for updating the web site

Coordinator,
DHBVNL, Hisar.

Annexure A

Recording of the values of earth resistance of various Equipments.

1. The object of an earth system is to provide as nearly as possible, a surface under & around an equipment/installation which shall be at uniform potential of zero. Proper earthing in the distribution system is required to be provided for the safety of life and equipment. Inadequate or defective earthing system can be highly dangerous to human life and can also result in failure of supply and damage to installations. It is, therefore, imperative that resistance should be sufficient low to allow the passage of current. However, it has been observed that to ensure that the earthings have been done properly, values of the earth resistance of the electrical equipment installed at various 66/33 KV Sub stations such as sub station yard earth mat, Power transformers, 33 KV Breakers, 11 KV Panel Boards, first H Pole of 11 KV lines emanating from 33/66 KV Sub Stations, distribution transformers and other electrical equipment, are hardly being taken by the maintenance staff. Only in few cases, such as Power Transformers, these are being measured and that only yearly.
2. So, it is advised to ensure that the earth values of the sub station earth mat, power transformers, all rating circuit breakers and all other equipment installed at the sub stations, first H pole of all, 11 KV lines and all distribution transformers are measured monthly. Besides this, the earth pits are required to be watered daily at the substations and fortnightly at other places so as to maintain proper earthing values.
3. The earth resistance shall be as low as possible and shall not exceed the following limits:

Power Stations	0.5 Ohms.
EHT substations	1.0 Ohms.
33 KV stations	2.0 Ohms
D/T Structures	5.0 Ohms.
Tower foot resistance:	10.0 Ohms.

4. It also needs to be ensured that earthing of first H pole of all 11 KV feeders emanating from various substations has been done properly. In case the same is not in order, the same may be re-done preferably plate earthing.
5. The values of the earth resistance of all the equipment, as mentioned above, be taken monthly and recorded in the maintenance registers as per format enclosed. This would be examined by the senior officers of the Nigam during inspections of the sub divisions/sub stations

Annexure B

Guidelines for proper laying of Consumer Installation and L.D. System

Many times CEI, Haryana has pointed out lapses in consumer installation and LD system and has recommended certain precautionary measures for improvement of the existing as well as new installations for bringing down the number of accidents/deaths due to electric shock. But still a number of shortcomings in laying of consumer installation and LD system in general have been reported in the recent past which often lead to electrical accidents causing loss of life of Nigam maintenance staff, general public and also to animals. The measures/ actions proposed by the CEI, Haryana and this office are given as under:-

1. Proper laying of LD system with adequate clearances.
2. It has been observed that un-authorised persons are sent for attending complaint which is against IE rules. It may be ensured that SDO/OP should issue authority letter to the line staff who are authorized for attending the complaints and maintenance work.
3. Consumers installations should be safe for operators working on factories.
4. Proper guarding should be provided across the street and along the street.
5. G.O.Switch should be properly maintained for its functioning. In the past, it has been observed that fatal accidents have occurred due to mal-operation of G.O.Switch, as some times blades do not come out of female contacts.
6. Staff may be instructed to use temporary earthing stick while working on equipments as well as on lines.
7. It has been observed that many times single person goes to attend the complaint which is against rules. Minimum two persons should be deputed to attend the complaint in the field.
8. Proper complaint should be recorded in the complaint register and PTWs issued while going out to work on lines.
9. For healthy operation of protection relays, it may be ensured that earthing of equipments and 11 KV lines is done properly.
10. Proper T&P may be provided to line staff. It has been observed that in rainy season, the staff is not provided with rain coat, rubber gloves, gum boots etc. and they have to work on electric lines drenched in water which is not safe.
11. JE/OP should coordinate and get the complaint attended under his supervision/control.
12. HT poles and other structures should be properly maintained and lightening arrestors be provided.
13. No new installation may be got commissioned without clearance from CEI office.
14. While working on the substation equipment such as breakers, transformers, instrument transformers, capacitors etc. properly insulated platforms and stools shall be used to stand upon.
15. All the safety devices and tools shall be properly inspected for their worthyness before using the same.
16. All electrical equipment must be erected, tested and maintained as per provisions of the Indian Electricity Rules, 1956 and relevant BIS codes.

Annexure C

Guidelines/instructions to be followed for safety of Workman.

1. No work shall be carried out unless permit to work has been got issued from the authorized person in-charge of operation, by the person authorized to carry out the work.
2. All voltages shall be considered dangerous and all electrical circuits shall be treated as live unless these are :
    a) Dead:
    b) Isolated from live apparatus/conductor;
    c) Efficiently connected to earth at all points of disconnection;
    d) Released for work by issue of permit;
    e) Checked for de-energisation
3. On hazardous work, at least two persons be deputed to carry out the work, one of which may be an observer.
4. Proper safety devices such as Rubber Gloves, Safety Belts, Boots, Insulated platforms and stools etc. and other special insulated devices shall be used while working on electrical apparatus and electrical supply lines.
5. While working on over head liens, all the conductors will be suitably earthed on both incoming and out going sides, by using proper earthing devices and workman should wear hand gloves of proper insulation and use safety belt.
6. While working on the substation equipment such as breakers, transformers, instrument transformers, capacitors etc., properly insulated platforms and stools shall be used to stand upon.
7. All the safety devices and tools shall be properly inspected for their worthyness before using the same.
8. To avoid accidents to animals, all stays of the poles must be provided with egg type insulators.
9. All electrical equipment must be erected, tested and maintained as per provisions of the IE rules, 1956 and relevant BIS codes.
10. After completion of a job, the system should be energized only after ensuring that all men and material have been removed from the site of work.
11. Workshops on safety measures for the technical staff of DHBVN, consumers and contractors engaged for carrying out electrical works of the Nigam, may be organized weekly in all the substations/sub divisions.