



KERALA STATE ELECTRICITY BOARD LIMITED

(Incorporated under the Indian Companies Act, 1956) CIN : U40100KL2011SGC027424

Office of the Chief Safety Commissioner

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Minutes of the meeting conducted by Chief Safety Commissioner, on 03.12.2018

in the Conference Room at L.D Kalamassery, for the evaluation of Existing Safety

Measures and Implementation of SAFETY Standards in the Transmission Wing

Participants:

1. Sri. Suku. R, Chief Safety Commissioner(CSC)
2. Sri. Brijlal.V, Chief Engineer, Transmission(South)
3. Sri. Rajan Joseph, Chief Engineer, Transmission(North)
4. Smt. D. Sudha devi, Deputy Safety Commissioner, Transmission (South)
5. Sri. George. V James, DYCE, Transmission Circle, Kalamassery.
6. Sri. K.N. Kaladharan, DYCE, Transmission Circle, Thrissur,
7. J. Sunil Joy, DYCE, Transmission Circle,Palakkad,
8. S. Vishnu Sarma, DYCE, Transmission Circle, Kottarakkara.
9. A.S. George Kutty, DYCE, Transmission Circle, Kannur.
10. Rajan. K.R, DYCE, Transmission Circle, Thodupuzha.
11. John Thomas, DYCE, Transmission Circle, Poovanthuruth
12. Usha Varghese, DYCE, Transmission Circle, Alappuzha.
13. Austin Dicruz, DYCE, SOC, Kalamassery
14. K.P. Pradeep, DYCE, Gris, Kalamassery
15. Beena Coilo, Exe.Engineer, Transmission Circle, Alappuzha
16. Kavitha C.K, Exe.Engineer, Transmission Circle,Kannur
17. R. Lekha Rani, Exe.Engineer(O), Transmission Circle, Kozhikkode
18. Suresh.K, Exe.Engineer, Transmission Division, Pathanamthitta
19. Mary Jose, Exe.Engineer(O), Transmission Circle, Kalamassery
20. Pushpalatha.s, Exe.Engineer(O), Transmission Circle, Thodupuzha
21. Shelvimol.T.R, Exe.Engineer(O), Transmission Circle, Poovanthuruth
22. Daisy Jose, Exe.Engineer(O), Transmission Circle, Kottarakkara.
23. Bindu.C, Exe.Engineer(O), Transmission Circle, Thiruvananthapuram
24. Pradeep Kumar.S, Exe.Engineer, Relay Division, Kalamassery
25. Mohammed Abdul Salam.P, Exe. Engineer, Transmission Circle, Malappuram
26. Lin. P.I, Exe.Engineer, Transmission Division, Thiruvananthapuram
27. Harikrishna.A, Exe.Engineer, O/o Chief Safety Commissioner
28. H. Suresh, Asst.Exe.Engineer,(O), Trans. Circle, Thrissur.
29. Anil Kumar.P.R, Asst.Exe.Engineer, Relay Subdivision, Edappon(C/O SOC, TVPM)
30. Sri. Jayasankar. D, Assistant Executive Engineer, O/o Chief Safety Commissioner
31. Mohammed Sham.B, Assistant Executive Engineer, O/o Chief Safety Commissioner

Introductory Remarks:

The meeting commenced at 10.30 AM with Sri. Suku. R, Chief Safety Commissioner on Chair. The Chair welcomed all participants to the meeting. Chair stated that

that Accident Reporting Tool "SMART" for transmission wing is ready and will be switched on by Sri. N. Sivasankara Pillai, Hon'ble CMD of KSEBL at VB, TVPM.

In short while the Hon'ble CMD of KSEBL joined the meeting through Video Conference from VB, TVPM and appreciated the Chair for the various Safety Measures introduced/implemented & various activities carried out in the Distribution sector for ensuring the safety of the field staff and wished all success for safety implementation activities in Transmission wing also. The CMD briefed about the "SMART" reporting in the Distribution and launched "SMART" for accident reporting in the Transmission wing in the presence of Director (Safety) & Director (T&SO).

The Chair informed that Accident reporting tool "SMART" will be fully functional w.e.f.1-1.2019 for Transmission wing. The Chair told that only Station Engineer is to be instructed for Accident reporting in SMART even though other AEs of the Substation will have the access to SMART in the Transmission. The Chair asked all the CSOs of the Transmission wing for providing necessary training for the Station AEs under their control (For the accident reporting in SMART) by utilizing the service of Distribution AEEs & AEs of nearby Offices.

The Chair, in his introductory remarks, informed that initial focus of safety wing was in the Distribution sector, as there were large no. of accidents & fatalities occurring. There is an average of 17 numbers of Electrical accidents and 1.8 people died belonging to Board staff and contract workers in a month in distribution last year. The Chair informed that No. of accidents have minimized drastically as a result of various Safety Standards/Measures introduced/implemented & various activities carried out. Only two Non-Fatal accidents have occurred in November 2018. The Chair emphasized the need for implementing safety standards in the Transmission also.

Safety Standards to be implemented in Transmission wing was discussed under various agenda as below.

1. PERSONAL PROTECTIVE EQUIPMENTS (PPEs) & Other Protective Equipments to Substations & Line maintenance Subdivisions(LMS)

The requirements of various PPEs were discussed and finalized.

1) Safety Shoes:

While carrying out safety inspections by the Chief Safety Commissioner in the substations it was noticed that operators are carrying out operations in the control room without wearing any personal protective equipments like safety shoes & safety gloves, which are necessary to prevent the effect of Touch potential & Step potential. Hence it is decided that all operating staff in the substation should wear safety shoes and safety gloves. Therefore it is decided to provide safety shoes to all KSEBL staff working in Substation & LMS.

Period of availability of Contract Operators in our substations cannot be ensured. The contract operators may leave the substation duty even without any intimation, if they get a better job. In this situation if we provide PPE like safety shoes to contract operators as being issued to Board's staff, it will incur financial burden to the Board.

As per The Regulation 7 of CEA (Safety Requirements for Construction, Operation and Maintenance of Electrical Plants and Electric Lines) Regulation, 2011 & Regulation 19 of

CEA(Measures relating to Safety and Electric Supply) Regulation, 2010 the responsibility to provide Personal Protective Equipments to the Contractor's staff lies with the contractor. Hence it is decided that safety shoes and overcoat for the contract operators are to be provided/arranged by themselves.

2)HT Gloves:

a) Up to 110kV S/S (For all 33kV,66kV& 110kV S/S): Minimum Requirement: Provide 3-Pairs (Operating staff-1pair, Maintenance Team-1Pair & Spare:1 Pair)

b) 220kV S/S: Minimum Requirement: Provide 4-Pairs

(Operating staff-1pair, Maintenance team(2Nos)-2Pair & Spare:1 Pair)

3) LT Gloves:

a) For all S/S : Provide 2 Pairs each.

4) Acid Proof Gloves:

a) For all S/S : Provide 1 Pair each.

5) Safety Goggles:

a) For all S/S : Provide 2 Nos. each.

6) Full Body Safety Belt:

a) For all S/S : Provide 4 Nos each.

7) Earth Discharge Rod:

a) Up to 110kV S/S (For all 33kV, 66kV& 110kV S/S): Provide 7Nos (Length:4M)

b) 220kV S/S: Provide 19Nos (5M Long-6Nos; 4M Long-13Nos)

In substations, earth rods are not being used frequently. Earth rods are used whenever there are works. It was noticed in many substations that earth rods are not being maintained properly. After removing the earth rods from the work place, cables of the earth rod are often made in loop and this loop is kept in the earth rod clamp. This will cause the looseness in the cable lug and will puncture/damage the cable insulation also. Hence it is instructed to remove the cables safely from the Earth rods after the works and keep them in a professional Tool Box and also keep the earth rods in a safe and arranged manner.

8) Gas Masks:

a) For all Substations : Provide 2Nos each

9) Shorting Clip LT:

a) For all Substations: Provide 2 Sets each

10) HV Non contact tester:

a) For all Substations: Provide 1No each

11) Ladder:

a) For all Substations: Provide 1No.each (Special purpose Ladder)

12) Thermal Imager: The importance of Thermal Imager discussed in the meeting. As this is a costly Instrument, it was decided to purchase one thermal Imager in each Division.

Deputy CE–System Operation informed that the requirement of PPEs for Relay, PET & Communication wings would be submitted immediately. The Chair Agreed.

Specific Equipment Requirement for Line maintenance Subdivision (LMS)

It is suggested to use special type Safety belt with double Lanyard (fall restraint type) for working on OH Line.

It was decided as below.

- 1) Ropes : Provide Minimum 4 Nos each per LMS
- 2) Pulley, Chain Block, Derrick, Ladder : Quantity Requirement with specification to be submitted by DYCE, TC, Kalamassery to the Chief Safety Commissioner with in 1 week.

Onsite Training Facility for LMS staffs :

The Chair entrusted DYCE, TC, Kalamassery for arranging Onsite Training Facility for LMS staffs. The facility will be ready in 2 weeks. The Chair asked all ARU Heads to make arrangement for giving onsite training for all LMS staffs under his/her control, by deputing them to this onsite training centre at Kalamassery.

2. Competency of Operating Staffs in the Substations:

Chair expressed concern on the competency of Contract operators especially in the event of few Accidents in the Substations. There are about 400 Nos. of Substations (varying from 33kV to 220kV) in the KSEBL at present. An average of 7 contract operators are working in a substation. So a total of around 2800 Nos of contract operators are presently working in the KSEBL. This figure is more than the Permanent Employees in the Transmission wing. Majority of the Contract operators in the substations enter in to operator's duty directly after their Engineering Graduation. Our costly substation Equipments (Crores worth) are operated by them. Their own safety, Safety of costly equipments, safety of thousands of field staffs who works after taking permit work depends upon competency of these contract operators. Majority of these contract operators are unaware of their works and their responsibilities.

Dy. Safety Commissioner (Transmission South) informed in the meeting that AG has called for the report of appointment of contract operators. Discussed the incident of (1) Ramapuram substation accident in which Contract operator issued PTW to Station Engineer, over phone and the contract operator himself carried out the work while the accident occurred, and (2) so many recording lapses in operators diary were found (over writings/corrections) while investigating incident of Kozhencherry S/S where an Electrical Accident occurred in a consumer premise in which 7 people were Electrocuted (including 3 numbers of Fatal). In Kodakara Substation Accident, Serious operational laps from the contract Operator led to the spreading of Fire from the control Room to the Yard.

It is known that Tests/Interviews are being conducted in some Divisions/Circles for selecting Contract Operators, where as in some other Divisions/Circles, only interview (for name sake) is conducted for selecting contract operators. It was pointed out by many participants that in many places, the contract operators do not have clear knowledge of the Equipments of the station, its operation and Feeding arrangements. It was pointed out that as many as 10 contract operators are being engaged for shift Duty in place of 4 operators in substations. During the recent Supervisor's Training in the Distribution sector, many supervisors have complained that wrong operations are being carried out by Substation Operators. While requesting switch off of required 11kV feeder, Sub Station Operator switch off another 11kV feeder from the S/S, where distribution staff escaped from accidents narrowly.

In the above circumstances, it is mandatory that the present operators have to Learn about their Substation, Equipments, feeding arrangement & handling of emergency situations and evaluation of the contract operators is also necessary. Hence it is decided to conduct Division wise **Work Ability Screening Test** for all Contract operators (with prior intimation) on Substation Equipments, Operation and Procedures specific to that Substation. Questions to be prepared by Division Executive Engineers and the screening test to be conducted in DEC 2018 itself. If any Operator fails in the Screening Test in the first attempt, that Contract staff will be given one more chance. Contract staff will be engaged for operator's duty, only if he/she qualifies in the Work Ability Screening Test.

3. Safe Operating Procedure:

The Chair insisted that all operations and maintenance works are to be carried out in a safe manner and told that Safety work procedure for Transmission wing is already prepared and it shall be followed upon approval by Board. All operations shall be carried out based on switching program and every operation should have a switching program.

Chair entrusted Sri. George. V James, DYCE, Transmission Circle, Kalamassery to prepare a sample switching program.

4. Dress code for Operating Staffs:

Most of the substations have lady operators. While carrying out operations for issuing PTW or for other general work, the loose dress will often lead to accidents. Lady operators in substation duty are wearing overcoats in some substations from long time back, where as in other substations it is not followed. The colour of the overcoat is not similar in these substations. Hence it is decided to follow in uniform manner in all substations with a single colour (Reviera Blue) overcoat for operators.

As part of standardization, all male operators are also required to wear over coat of similar colour (Reviera Blue). Hence it is decided to wear overcoat by operators & shift assistants in all substations from 1st January 2018 onwards.

5. Fire Protection Equipments :

The Chair told that fire extinguishers suitable for Electrical fires shall be made available in all Substations and also highlighted that foam type extinguishers are not available in many substations and it should be procured in such cases. It was suggested that fire extinguishers suitable for firefighting from long distances, like High pressure water mist type fire fighting system, should be made available in major substations and Grid stations.

A demonstration of High pressure water mist type fire fighting system was conducted. Pallom DYCE informed that a similar type of fire fighting unit is available in Pallom Substation and this unit was very useful for combating fire during when a fire incident happened in the substation yard.

It was pointed out that conventional type fire extinguishers is effective only in the incipient stage of fire, whereas water mist system can effective control fires in blaze stage also. Hence it is decided that as first Phase, High Pressure water mist system to be provided in 220 kV & Major 110 kV s/s.

6. Accidents reporting and Compensation to Victims:

The Chair told the following regarding the accidents, reporting & compensation.

- 1) Accidents in Transmission wing are not being reported promptly and many of the accidents are not even reported from field also.
- 2) Prompt action is needed for the payment of compensation to accident victims.
- 3) The Accident reporting through SMART software will be extended to Transmission wing w.e.f 01.01.2019

The Chair asked to submit a report from all Transmission circles, on accidents that occurred in the last 3 years with details of compensation paid to victims, before 14-12-2018

7. Upkeep of Substation and Yard:

The Up keep of Substations is a point of concern in many places. Many substations and Yard are not properly maintained, whereas up keep of some substations like Perinad S/S, Kattakkada S/S etc are good. The Chair advised to arrange garden and other beautification works in all substations within two months. All CSOs to ensure the same.

8. Safety In line Maintenance wing:

The below points were discussed and decided.

- 1) Safety is very important in line maintenance works & Safety precautions need to be taken before carrying out any work.
- 2) Use of full body safety belt should be made mandatory for all types of works in elevated position and need to be ensured.
- 3) Utmost care should be taken while working on double circuit towers with one circuit in energized condition, to avoid accidents due to induced voltages and lack of safe working distance.
- 4) Proper lighting arrangements should be made while working during night hours.

A demonstration of emergency tower lighting system was conducted.

9. Safety during Line upgradation works:

The chair stressed the need for utmost safety precaution to be taken while carrying out upgradation works. A case study of Fatal accident at Wayanad to a contract worker discussed. All are reminded that Safety precautions need to be taken to avoid accidents due to touch and step potential while doing tower foundation works very near to existing tower/energized lines and need to ensure proper communication between supervisors and staff /contractors.

10. Safety in GIS (Gas Insulated Substations):

All GIS Substations have EOT Cranes, which require periodic inspection and certification, but it is not being done presently. Periodic inspection of EOT cranes, Slings, Pulley Blocks, Maxpullers etc need to be done and records should be properly maintained.

The following need to be done urgently.

- a) Safety inspections should be done by experts for high pressure oil systems and pressurized enclosures in GIS Substations.

During the discussion, EE, Transmission Div, TVPM highlighted maintenance issues regarding overhauling of GIS components in TVPM. The Chair asked for an urgent report on issues of the GIS from the EE, Transmission Div, TVPM.

Also entrusted DYCE, Trans. Circle, Kalamassery to submit a report on the issues of GIS Substations after studying the issues in detail.

11. Compliance to CEA Regulations:

The chair informed that as per the regulation 44(2)(ix) Transformers of 10 MVA and above rating or in case of oil filled transformers with oil-capacity of more than 2000 litres, should be provided with fire fighting system as per IS - 3034: 1993 or with Nitrogen Injection Fire Protection system. At present this requirement is not complied in KSEB Ltd. Chief Engineer (Trans-North) is entrusted for submitting a note to this effect (within this month) by citing the necessity of this system & its expense.

12. Upkeaping of Earthing system:

Accidents will occur if the Station earth resistance is above the prescribed/standard value. It is reported in the meeting that station earth resistances were already measured. The Chair directed all CSOs to submit the measured earth resistance values of the Substations under their control immediately and also to take necessary immediate remedial action to bring station earth resistance within prescribed/standard value, if the earth resistance value is above the prescribed/standard value.

13. Supervision of works in 33kV Substations.

A case study of accident occurred at 33kV Ramapuram Substation was analyzed. In this substation, rectification/repair work was carried without the supervision of Board staff. Work was carried out by the contract operator himself after issuing PTW to station engineer, over phone. Similar type of activities is being carrying out in other substations also. This is of recurrence nature. In this context, the Chair called for the attention of all to ensure proper supervision as envisaged in CEA(Measures relating to Safety and Electric Supply) Regulation, 2010 for all breakdown and maintenance works in 33kV Substation to avoid accidents.

14. Safety inspections of Substations and EHT line works.

The Chair insisted for the monthly safety inspections to be carried out by various Officers at the substations/ EHT lines under their control as detailed below.

- a) The Deputy Safety Commissioner(DSC)-----5 Inspections.
- b) Chief Safety Officer(CSO)----10 Inspections.
- c) Safety Officers(SO)-----Inspection in all Stations (Monthly).

The Inspection report with photos may be sent in State Safety WhatsApp & Safety Email. All Deputy Safety Commissioners are advised to consolidate the Inspection reports under the Circle and the same should be submitted to the Chief Safety Commissioner.

The meeting came to a close at 5:30PM.


Chief Safety Commissioner

CHIEF SAFETY COMMISSIONER
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