Agenda No.1

Approval of the Minutes of the 3rd Meeting of the Standing Committee on Electrical Safety held on 3rd August, 2018 at Surajkund, Haryana.

Agenda No.2

Formation of Sub-Committee from among the Members of the Standing Committee for awareness generation programme.

It has been observed that even after having an elaborate Regulation on Electrical Safety and its subsequent amendments brought out from time to time, the number of electrical accidents in various utilities is still on the higher side. The problem is especially severe in the lower voltages (33 kV and below), where the number of fatal electrical accidents are higher. This indicates that there is a general lack of awareness among the consumers, utilities and the supplier at the lower voltage on the adoption of the electrical safety measures. CEA on its own has been trying to spread the message of electrical safety through different workshops it has been conducting with private entities like, International Copper Association-India (ICAI) and IEEMA, for the last few years. However, the figure of electrical accidents that is emerging from the States for the last few years indicates serious need for spreading the message of electrical safety among the people at the district/block levels so that the people have a proper understanding about the danger of handling electricity and the safeguards that need to be adopted while handling it. The efforts for mass awareness generation exercise cannot be successful without the involvement of the States in spreading the message on electrical safety through awareness generation programme at the district/block level. For these there is a need to conduct workshops in different districts of the States throughout India with the active cooperation of the State Electrical Inspectorate, public and private sector bodies and State Administration.

In the 3rd meeting of the Standing Committee on Electrical Safety held in Surajkund, Haryana it was decided that the States would forward the names of

Expert Speaker on Electrical Safety for inclusion in the Sub-Committee, so that their expertise can be utilized for delivering lectures and spreading the message of electrical safety through the awareness programmes in the states. So far we have received the nominations from the following States:

Name of the State	Name of the Speaker
Nagaland	Er. T.K. Halder, EI
West Bengal	Sh. Partha Sarathi Maji, Deputy CEI
Kerala	Dr. Faisal Rehman. P, Asstt. EI
Assam	Sh. Utpal Konwar, Deputy CEI

The rest of State Electrical Inspectorates are requested to kindly send their nomination of suitable officers from their state, whose service can be utilized for awareness programmes in the country. It is requested that the name of the officers must be sent to this office on or before the 4th Standing Committee meeting to be held in Ranchi, Jharkhand.

Agenda no.3

Issues regarding the crossing of oil and gas pipeline by Transmission lines

Oil & Gas PSUs have highlighted an issue that the high voltage transmission lines crossing their underground pipelines is affecting their pipelines by means of induced voltage caused by the Electromagnetic interference (EMI) originating from these transmission lines. As stated by them, these induced voltages in pipelines are disturbing the desirable Pipeline to Soil Potential difference (PSP), is needed to be maintained to avoid external corrosion of the pipelines. One incident of crude oil leakage was also reported by an Oil PSU, in which the lab report suggested that the pipeline failed due to the AC induced corrosion.

As in near future, many new transmission lines are envisaged of Central sectors, State sectors and Private sectors and also some existing transmission lines of some state transmission utilities and PGCIL are crossing these pipelines. Since, this issue has

been recently highlighted, CEA had suggested for joint study by the stakeholders on this issue at different locations and at varying load conditions on the transmission lines so that the possible AC mitigation measures can be suggested. Subsequently, a joint study took place (on IOCL's MPPL & CPPL Pipelines in the vicinity of 400 kV Bassi-Sikar D/C line) under shut down condition and at approximately 10% loading in which no significant deviation was found due to EMI and the induced AC voltages as well as the PSPs were well within the prescribed limits. However, more different scenarios of loading and locations of crossings needed to be studied to come to a conclusive solution and the same is underway.

Moreover, there have been proposals by Oil & Gas PSUs for amendment of relevant CEA safety regulations to harmonize it with the relevant guidelines of Petroleum and Natural Gas Regulatory Board (PNGRB) and make it more comprehensive. As envisaged in the sub-section 53 (b) of Electricity Act, 2003 that CEA, in consultation with the State Governments has to make provisions relating to safety and electricity supply to eliminate or reduce of the risk of damage to property of any person or interference with use of such property.

The basic amendment proposed by the Oil & Gas Companies are as under: -

1. The angle of crossing of oil/gas pipeline by electric transmission line should be 90 degrees as far as possible. However, if there is any problem in the crossing, the angle of crossing in any case should not be less than 60 degrees.

2. The crossing of the pipeline of petroleum/natural gas by any transmission line shall be done from at least not less than 8 meters height.

3. No Tower footing/ structure of the overhead line of 33 kV AC and above/ HVDC shall be closer than 25 meters to the edge of the Right of way of a petroleum/natural gas pipeline.

As this issue is of emergent nature, there is a need for all the States to give their views on the same, so that there could be safe and conducive ecosystem for the integrated development of critical infrastructure like Transmission lines, Oil pipelines, etc. and

all safety measures is brought into CEA safety regulations, so that they do not pose hindrances in the development of projects.

Members may Deliberate and advice.

Agenda no.4

Right of Way (ROW) issues for 11 kV, 33 kV and 66 kV Transmission lines

Urbanization and infrastructural development has left inadequate spaces for laying down transmission lines in urban areas. Consequently, land acquisition for the same is becoming difficult task, which pushed Ministry of Power to constitute a Committee to look into Right of Way (RoW) compensation issues and to explore the possibilities of reduction / optimization of transmission corridor through various technological options. To address this RoW issues, there are many technical option available viz, use of covered conductors, XLPE cable or Gas Insulated Transmission Line (GITL), compact towers designs, uprating the existing line with high Ampacity conductor [High Temperature (HT) / High Temperature Low Sag (HTLS)] in the existing corridor, use of steel pole structure / multi-circuit / multi-circuit & multi-voltage towers in urban areas and in approach section near substation for effective use of available corridor etc.

In this regard, it may be stated that CEA Electrical Safety Regulations, 2010, with its present amendments does not cover/indicate the ROW requirements for transmission lines. Neither it shows any relation of ROW with the electric safety clearance specified in regulation 58, 60 and 61 of CEA Electrical Safety Regulations, 2010. Due to this, problem is being faced by the Transmission/Distribution licensees in prohibiting people from construction of permanent structures below or close to the EHV or HV electric corridors. This is also proving to be a huge challenge for the Construction, O&M and Electric safety officials in ensuring adequate safety clearance from these EHV/HV lines.

On many occasions it has been observed that the utilities/general public has a misconception regarding the required safety clearance of transmission line from a building and its linkage with the ROW of transmission lines. Many times it so happens that people unknowingly construct their house or create any permanent structure very close to the transmission line without understanding the fact that the overall ROW for the transmission line has been identified considering the electrical safety aspect. Since there is a misconception regarding the electrical safety clearance of a building from transmission line or the building/structures being constructed in the ROW of the transmission line, so there is a need to include the ROW requirement including the ROW for the lower voltages. Presently, as per the current practice, the ROW requirement for the lines of various voltage level are as under:

Transmission voltage (kV)	Right of the Way (Mts.)
11	7
33	15
66	18
110	22
132	27
220	35
400 kV S/C	46
400 kV D/C	46
765 kV S/C (with Delta Configuration)	64
765 kV D/C	67
±500 HVDC	52
±800 HVDC	69
1200	89

A Committee under CE, SP&PA-I is working towards optimization of the ROW for transmission voltages upto 66 kV and above, with a special chapters on ROW for 33 kV Covered/insulated conductors. So till the time the ROW Report is accepted, one may utilize the above ROW.

In the last amendment of CEA Electrical Safety Regulations, it was proposed that all the electric lines 33 kV and below to be constructed through the human inhabited areas or forest land, must be constructed with AB Conductors, Covered conductors or with U/G cables. As such, there is a need to work out the ROW requirement for electric line of voltage class 33 kV and below. Accordingly, all the state inspectorate may furnish their view. There is also a need for formation of subcommittee which would look into it and give its suggestion to the Standing Committee.

Members may Deliberate and advice.

Agenda no.5

Formulation of the Policy for starting National Electric Safety Award for States, Government PSUs, Private Sectors and Discoms

The National Electrical Safety Award is proposed with the aim to motivate and enhance the electrical safety culture among the utilities, Discoms, Public Sector Enterprises and Private Industries. The proposed award would certainly create the competitive atmosphere among all the agencies dealing with Electricity. Competitiveness amongst all the stakeholders regarding enhancement of electrical safety standard would strengthen their electrical safety ecosystem which in turn would result in lowering the number of electrical accidents at the workplace. With a view to inculcate the sense of electrical safety amongst the users as well as the utilities the system of award could motivate the organizations to implement the Regulation, create awareness among the utilities and undertake monitoring and periodic maintenance of the Electrical system more intensely. So, this award would also motivate the stakeholders:

i) to organize more numbers of sensitization workshops/ awareness programmes.
ii) Reduce the number of accidents.

iii) Carry out proper maintenance of the system.

iv) Create safe environment for the Work persons.

To choose suitable organization for the award, there is a need to formulate a detailed framework based on which the winner for the award could be chosen. The awards could be considered in these categories:

1) National Electrical Safety Award for the best performing states in reducing the accidents.

2) Electrical Safety Award to the best performing Central and State PSU with regards to reduction in accidents.

3) Electrical Safety Award to the best performing Discoms in the country with regards to reduction in accidents and improvement in Electrical safety environment.

4) Best Performing Private Organization with regards to reduction in accidents and improvement in Electrical safety environment.

Members may Deliberate and advice.

Any Other issue (No.1)

Requirement of additional clearances in hilly areas

As we are aware that the power transmission line during its operation emits electric and magnetic field. The strength of the electric and magnetic field depends on their operating voltage and current flowing (line loading) through the line. However, When the exposure levels of these electric field and magnetic field generated by these transmission lines in their vicinity exceed specified limits (for time varying Electric field, it is 10 kV/m for occupational exposure and 5 kV/m

for general public exposure), they are likely to have adverse effects on human beings, plants, and animals.

A similar kind of issue was raised lately by the administration of Himachal Pradesh Government and Sikkim Government that some of their residents living in proximity to the transmission lines in the hilly areas were getting mild electric shocks due to Electromagnetic Induction.

During field investigation of these affected areas by CEA officers, some constructions of the affected persons were found in ROW. It was also found that in spite of adequate clearances from the transmission lines are being maintained as per the existing CEA Electrical Safety Regulations, in some of the cases, there are instances of electromagnetic induction. Since there are many factors in the hills which are needed to be taken into account like atmospheric conditions, topography, configuration of towers, proximity of the grounded metallic structure of the tower, proximity of other nearby metallic structure, etc. for determination of electric field generated by these transmission lines. However, it seems there is a need to bring suitable provisions in CEA safety regulations so that the issues of electric field leading to electric shock/continuous exposure can be addressed in hilly areas. In this regard, all states are requested to give their views and suggest some suitable measures to be adopted in the CEA electric safety regulations to address this issue.

Members may deliberate and advice.

Presentation:

(a) Presentation by Power Grid Corporation of India Ltd. (PGCIL) and Sterlite on use of Power Voltage Transformer (PVT) for telecommunication purpose.

****