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No. CEI/1/2/2016/५५७-५८९

Dated: 10.03.2016

Subject: Minute of Meeting of Chief Electrical Inspectors of all states held on 25.02.2016 at NRPC, Katwaria sarai, New Delhi.

A Meeting with State Chief Electrical Inspectorate on Amendment proposals of CEA (Measures relating to Safety and Electric Supply) Regulations, 2010 (as amended) held on 25.02.2016 at NRPC, Katwaria sarai, New Delhi. The Minutes of meeting is attached herewith.

(Goutam Roy) ७८७/१६

Chief Engineer &
Chief Electrical Inspector to Govt. of India

Central Electricity Authority
Chief Electrical Inspectorate Division

Subject: Minutes of Meeting with state Chief Electrical Inspectorate on Amendment proposals of CEA (Measures relating to Safety and Electric Supply) Regulations, 2010 (as amended).

List of the participants is annexed.

2. A meeting with state Chief Electrical Inspectorate on Amendment proposals of Safety Regulations held on 25.02.2016 in the Conference Room, NRPC Building Katwaria Sarai, New Delhi. Shri Goutam Roy, Chief Engineer, CEI Division, CEA welcomed the Member (PS), CEA and other participants in the meeting. He thanked Member (PS) for his consent for holding and attending the meeting in spite of his hectic schedule. He highlighted the need for frequent interaction between Central and State Electrical Inspectorates. He stated that with the presence of engineers from government as well as private organizations looking after the electrical safety aspects, this meeting would provide excellent opportunity for interaction of the electrical safety experts of the country, over and above the regular agenda for discussion on the amendment proposed under the CEA regulation (Measures relating to Safety and Electric Supply) Regulations, 2010. He stated that the meeting would be in two sessions. The first session would be on the amendments on the issues proposed by CEA and Kolkata Metro. The second session would be on the issues highlighted by TPDDL and BSES. The second session would start with presentation from some reputed companies in the field of Aerial Bunched Cable (ABC)/covered conductors, natural/synthetic ester oil for transformer and dry type transformer. This would be followed by discussions on the agenda items pertaining to the presentation. He requested the participants and the presenters to be precise and focus on the subject of the agenda for discussion.

3. Member(PS) welcomed the participants to the meeting. He stated that power sector in the country has expanded many-fold in generation, transmission and distribution. The challenges in safe operation has equally increased, not only for electrical installations, but also towards ensuring the safety of lives. He emphasized on making the CEA regulation (Measures relating to Safety and Electric Supply) Regulations, 2010 more investor friendly and technologically updated without compromising on the operational safety and safety of human lives. He requested the participants to discuss the agenda on the amendment in the regulation with an open mind and reach to a solution which is for better technology and better work environment for the people associated with it. He wished for meaningful deliberations so that a quality of wisdom could be reached.

The regular agenda for discussion were taken up after brief introduction with the participants. The summary records for the discussion are as under:

Session I

- i) In Session-I, the regulations amendment proposals of 2(fa), 5(2), 30(2), 30(3), 43(1), 43(3), 43(4), 63(4) were discussed.

Regulation 2(fa)

Existing Regulation: 2(fa) “**Char**ted Electrical Safety Engineer” means a person as **notified** by the Appropriate Government as referred to in regulation 5A.

Proposed: 2(fa) “**Char**tered Electrical Safety Engineer” means a person as **authorised** by the Appropriate Government as referred to in regulation 5A.

Deliberations:

Director, Legal Division, CEA insisted that the word “notified” should be retained.

CEI, Gujarat expressed that notification procedure is very lengthy and cumbersome. So authorization word would be more appropriate.

CEI, Odisha expressed that they are not in favor of self-certification through Chartered Electrical Safety Engineer or Electrical safety officer because these are paid employees of owner, therefore can not go against owner in case of non compliance of any safety Regulations. Responsibility also cannot be fixed to those in case of any problem. If it is in the hands of the Government, public servants are responsible in this case. Action can be taken against them in the case of laxity.

CEI to GoI replied that the issue of appointment of safety engineers would be opted only for notified voltage and below. A Chartered Electrical Safety Engineer(CESE) could be appointed for this. For further clarification on the CESE, a committee has been constituted to finalize authorization procedure of CESE. The committee already had one meeting. The issue requires further deliberation. As soon as the recommendation of the committee on the basic guidelines for the CESE is obtained, the same would be discussed with the State Electrical Inspectorates. As such the issue of CESE need not be discussed in this meeting.

Director, EI Division, CEA said that this provision is already there in the regulations. we are rectifying only typographical error in the word 'Chartered' and replacing the word 'notified' by 'authorized' to make the definition in line with the regulation 5A.

The participants from the States were in general in agreement with the proposal.

Regulation 5(2)

Existing Regulation: 5(2) The Electrical Safety Officer shall be an Electrical Engineering degree holder with at least five years of experience in operation and maintenance of electrical installations.

Proposed: Diploma holders may be included

Deliberations:

CEI, Telangana expressed that inclusion of diploma holders in the said regulation is not acceptable. The qualifications and experience should be in line with the Electrical Inspector i.e. Degree Holder with 10 year experience. The experience in the field of Construction of Electrical installations shall also be included.

Director, EI Division CEA intimated that CEA has already proposed for reduction in experience of Electrical Inspector to 5 year.

CEI, Gujarat expressed that Diploma holders should not be allowed to be Electrical Safety Officer/CESE. Diploma holders with experience can be allowed up to a certain voltage level for self-certification, 05 year experience is not sufficient.

CEI, Delhi expressed that Diploma holder with 05 year experience can be allowed.

CEI, Haryana agrees with Delhi.

CEI, Chhattisgarh expressed that Degree holder with 05 year experience or diploma holder with 10 year experience can be allowed.

CEI, Tamilnadu expressed that 05 year of experience is not sufficient and it should be 10 years.

CEI, Andhra Pradesh said that we may not give safety responsibility to a person who do not have knowledge of Rules and Regulations.

CEI to GoI stated that since in many industries/organizations engineers with diploma holders are involved in O&M activities so it would not be fair if the Diploma holders engineers with longer experience are not considered for Electrical Safety Officer. As such the proposal of Chhattisgarh for degree holders with 05 year experience or diploma holders with 10 year experience in operation and maintenance of electrical installations is justified for Electrical Safety Officer. Further the proposal of Andhra Pradesh regarding the need for knowledge in rules and Regulation also merits consideration.

The participants from the States agreed with the proposal for degree holders with 05 year experience or diploma holders with 10 year experience in operation and maintenance of electrical installations along with knowledge in rules and Regulation for electrical safety can be considered for Electrical Safety Officer.

Regulation 30(2) and 30(3)

Existing regulation: 30(2) The periodical inspection and testing of installation of voltage equal to or below the notified voltage belonging to the supplier or consumer shall be carried out by the supplier or owner or consumer and shall be self-certified.

Existing regulation: 30(3) The periodical inspection and testing of installations of voltage above the notified voltage belonging to the supplier or consumer shall be carried out by the Electrical Inspector:

Provided that the supplier or owner or consumer has the option to get his installation inspected and tested by the Electrical Inspector of the Appropriate Government:

Provided further that the every electrical installations of mines, oil fields and railways shall be periodically inspected and tested by the Electrical Inspector of the Appropriate Government.

Proposed: 30(2) The periodical inspection and testing of installation of voltage equal to or below the notified voltage belonging to the supplier or consumer shall be carried out by the supplier or owner or consumer and shall be self-certified.

Provided that the supplier or owner or consumer has the option to get his installation inspected and tested by the Electrical Inspector of the Appropriate Government.

Provided further that every electrical installation of mines, oil fields and railways shall be periodically inspected and tested by the Electrical Inspector of the Appropriate Government.

Proposed: 30(3) The periodical inspection and testing of installations of voltage above the notified voltage belonging to the supplier or consumer shall be carried out by the Electrical Inspector.

Deliberations: Director, CEI, CEA informed that this amendment is due to the two proviso, which were wrongly placed in regulation 30(3). As these proviso relates to the self-certification, these should be in regulation 30(2) instead of 30(3).

CEI, Karnataka suggested that the proviso regarding mines, oil fields and railways may be incorporated in the principal Regulation 30(2) and the wording may be changed accordingly.

To this participants were of the view that as merging of this proviso with 30(2) is not going to change the spirit of the regulation, so there is no need to merge the proviso in 30(2) and rewording it and agreed with the proposal as put up under the agenda.

Existing regulation: 43(1) Every electrical installation of notified voltage and below shall be inspected, tested and shall be self-certified by the owner of the installation before commencement of supply or recommencement after shutdown for six months and above for ensuring observance of safety measures specified under these regulations and such owner shall submit the report of self-certification in the Form-I or Form-II or Form-III, as the case may be, of Schedule-IV to the Electrical Inspector.

Existing regulation: 43(3) Every electrical installation of voltage above the notified voltage and all the apparatus of the generating stations and above the capacity specified under regulation 32, shall be required to be inspected and tested by the Electrical Inspector before commencement of supply or recommencement after shutdown for six months and above for ensuring observance of safety measures specified under these regulations:

Provided that the owner or supplier or consumer has the option to get his installation inspected and tested by the Electrical Inspector of the Appropriate Government.

Existing regulation: 43(4) The Electrical Inspector may, on receipt of self-certification report referred to in sub-regulation (1), accept the report submitted by the supplier or owner and record variations as the circumstances of each case may require and may recommend that the defects may be rectified as recommended:

Provided further that every electrical installation covered under section 54 of the Act including every electrical installations of mines, oil fields and railways shall be inspected and tested by the Electrical Inspector of the Appropriate Government as specified in sub-regulation (3).

Proposed: 43(1) Every electrical installation of notified voltage and below shall be inspected, tested and shall be self-certified by the owner of the installation before commencement of supply or recommencement after shutdown for six months and above for ensuring observance of safety measures specified under these regulations and such owner shall submit the report of self-certification in the Form-I or Form-II or Form-III, as the case may be, of Schedule-IV to the Electrical Inspector.

Provided that the owner or supplier or consumer has the option to get his installation inspected and tested by the Electrical Inspector of the Appropriate Government.

Provided further that every electrical installation covered under section 54 b (i) of the Act including every electrical installations of mines, oil fields and railways shall be inspected and tested by the Electrical Inspector of the Appropriate Government as specified in sub-regulation (3).

Proposed: 43(3) Every electrical installation of voltage above the notified voltage and all the apparatus of the generating stations and above the capacity specified under regulation 32, shall be required to be inspected and tested by the Electrical Inspector before commencement of supply or recommencement after shutdown for six months and above for ensuring observance of safety measures specified under these regulations.

Proposed: 43(4) The Electrical Inspector may, on receipt of self-certification report referred to in sub-regulation (1), accept the report submitted by the supplier or owner and record variations as the circumstances of each case may require and may recommend that the defects may be rectified as recommended:

Deliberations: Director, CEI, CEA informed that this amendment is due to the two proviso, which were wrongly placed in regulation 43(3) and 43(4) respectively. As these proviso relates to the self-certification, these should be in regulation 43(1) instead of 43(3) and 43(4). This was agreed by the members. However, the amendment of replacing section 54 by section 54(b)(i) in second proviso was rejected by all the members stating that this change would be in contravention to the provision of the Act.

Dy. CEI, Delhi expressed that Form-I, Form-II may be deleted from Regulation 43(1) as these are applicable for below or equal to 650 V.

The participants from States agreed for the following amendments:

Regulation 43(1). Every electrical installation of notified voltage and below shall be inspected, tested and shall be self-certified by the owner of the installation before commencement of supply or recommencement after shutdown for six months and above for ensuring observance of safety measures specified under these regulations and such owner shall submit the report of self-certification in the **Form-III** of Schedule-IV to the Electrical Inspector.

Provided that the owner or supplier or consumer has the option to get his installation inspected and tested by the Electrical Inspector of the Appropriate Government.

Provided further that every electrical installation covered under section 54 of the Act including every electrical installations of mines, oil fields and railways shall be inspected and tested by the Electrical Inspector of the Appropriate Government as specified in sub-regulation (3).

43(3). Every electrical installation of voltage above the notified voltage and all the apparatus of the generating stations and above the capacity specified under regulation 32, shall be required to be inspected and tested by the Electrical Inspector before commencement of supply or recommencement after shutdown for six months and above for ensuring observance of safety measures specified under these regulations.

43(4). The Electrical Inspector may, on receipt of self-certification report referred to in sub-regulation (1), accept the report submitted by the supplier or owner and record variations as the circumstances of each case may require and may recommend that the defects may be rectified as recommended.

Regulation 63(4) (c)

Existing Regulation: 63(4)(c) supervision charges and charges incurred by the supplier or owner in complying with the provisions of section 67 of the Act, in respect of such alterations.

Proposed: 63(4)(c) supervision charges **to the extent of fifteen per cent of the wages mentioned in sub clause (b);** and charges incurred by the supplier or owner in complying with the provisions of section 67 of the Act, in respect of such alterations.

Deliberations:

Director, EI Division, CEA intimated that during the amendment of safety regulations some of the words are unintentionally omitted due to typographical error.

Representative of Kolkata Metro Rail Corporation Ltd expressed that the amendment is necessary and it should be done as soon as possible.

Director, Legal Division, CEA expressed that the Regulatory Commission may be consulted to determine the supervision charges.

Director, EI Division, CEA, emphasized that the proposed amendment would reset regulation 63(4)(c) in its original form as it was in the principal regulation 2010 and the typographical omission would be rectified. Also there is no necessity for introducing new phrase like in consultation with Regulatory Commission.

The participants from States were agreed for the proposal in the agenda.

Session II

1. Regulation- 61(3)

Existing Regulation: 61(3). The horizontal clearance between the nearest conductor and any part of such building shall, on the basis of maximum deflection due to wind pressure, be not less than-

- | | | |
|-------|---------------------------------------------------------------------------|------------------------------------------------------------------------|
| (i) | for lines of voltages exceeding 650 V upto and including 11,000 Volts | - 1.2 metres |
| (ii) | for lines of voltages exceeding 11,000 V and up to and including 33,000 V | - 2.0 metres |
| (iii) | for lines of voltages exceeding 33 kV | - 2.0 metres plus 0.3 metre for every additional 33kV or part thereof. |

Proposed: 61 (3) The horizontal clearances between the nearest bare conductor and any part of such building shall, on the basis of maximum deflection due to wind pressure, be not less than 1.2 metres for lines of voltages exceeding 650 V upto and including 11,000 Volts. In case of insulated cable and Aerial Bunched Cable, the horizontal Clearance shall not be less than 0.1 meter.

Sr. VP Raychem RPG Pvt. Ltd. gave presentation on covered conductors. The details of the presentation is at **Annexure-I**.

Chief Engineer (DP&D) suggested that (1) IS for these type of conductor are not available so the manufacturers may approach BIS for preparation of IS and the effectiveness of insulation may be tested as per the Indian Standards. (2) As these type of conductors would require special type of fittings, the manufacturer may also approach for preparing IS for fittings also.

Representative of Raychem RPG Pvt. Ltd. stated that they are pursuing with BIS to notify the IS.

Head-Central Engg. Services BRPL gave presentation on High voltage ABC. The details of the presentation are at **Annexure II**. He stated that in the unauthorized colonies of Delhi & in JJ cluster many times it becomes difficult to take LV lines so the Delhi Discoms has to supply electricity by taking 11 KV ABC and stepped down at 220 V through pole mounted transformer and supply the same to the household through DB.

Deliberations:

CEI Maharashtra stated that reduction of the horizontal Clearance to 1.2 meter could pose a greater risk to the human life as the pole mounted transformer would be within reach of the household. As with time the sleeves on the transformer and other insulation in the joints gets worn off posing a great danger to the nearby households. As such this may not be allowed.

Most of the participants were also of the similar view as of CEI Maharashtra.

Director, Legal Division, CEA expressed that since laying of 11 KV distribution network in congested lanes in the city is a local problem. Regulation should not be amended to address local issues. In these type of cases, Appropriate Government may invoke the clause specified in regulation 116 and may allow deviations by order in writing, if needed. So there is no need for change in regulation for a specific case.

CEI, Gujarat agrees with the views of Director, Legal Division, CEA and suggested that in such cases where 11 KV line has to be laid in narrow lanes underground cables may be used.

SEI, Tamilnadu agreed with the proposal of Gujarat.

CEI Telangana & Maharashtra agrees with the views of Director, Legal Division, CEA.

TPDDI as well as BRPL expressed that as per the mandate of Government of NCT of Delhi, the unauthorized colonies in Delhi, supply has to be extended. Since the lanes through which the cables are passing are narrow and they are facing difficulty in maintaining the horizontal clearance as per CEA regulation 61(3). Also stated that it is difficult to lay underground cables because of various other underground systems. He stated that LT cable is also dangerous in case of mishandling whereas no clearances required for LT cable in the said regulations.

Xen. Haryana suggested that LT cable may be used where the lanes are narrow.

Representative of BRPL stated that this results in more losses and the voltage would be difficult to maintain. Therefore, they requested to agree with the proposal of agenda.

Chief Engineer, DP&D Division, CEA stated that the issue is serious in nature as there is obligatory requirement on the part of Delhi DISCOMS to extend supply to these colonies so straight forward rejecting their proposals would not be fair and he requested the states to suggest remedy for the problem.

CEI CEA stated that considering the obligatory requirement of Delhi DISCOMS for extending power supply to all unauthorized colonies and problem faced by them for not obtaining the required approval from the appropriate government for charging the lines passing close to the buildings, there is need for giving a proper solution to the problem. He stated that the state may give a serious thought on this issue and **the proposal is flagged for discussion in the next meeting**. He stated that till such time a solution to this problem is found, DISCOMS may seek approval under regulation 116 (1) & (2) of the CEA (Measures relating to Safety and Electric Supply) Regulations, 2010.

Participants from the states agreed with CEI CEA.

2. Regulations 44(2)(vii) (e)

44(2)(vii)(e). Dry type of transformers only shall be used for installations inside the residential and commercial buildings;

Proposed: 44(2)(vii)(e). Dry type/ **K-class ester fluid filled** transformers only shall be used for installations inside the residential and commercial buildings;

Regulations 44(2)(ix)

44(2)(ix) he shall ensure that the transformers of 10 MVA and above rating or in case of oil filled transformers with oil capacity of more than 2000 liters are provided with firefighting system as per IS - 3034: 1993 or with Nitrogen Injection Fire Protection system;

Proposed: 44(2)(ix). He shall ensure that the transformers of 10 MVA and above rating or in case of oil filled transformers with oil capacity of more than 2000 liters are provided with firefighting system as per IS - 3034: 1993 or with Nitrogen Injection Fire Protection system **except in case of K-class ester filled transformers**.

Regulations 44(2)(xi)

i) 44(2)(xi) he shall ensure that oil filled transformers installed indoors in other than residential or commercial buildings are placed at the ground floor or not below the first basement;

Proposed:44(2)(xi). He shall ensure that oil filled transformers installed indoors in other than residential or commercial buildings are placed at the ground floor or not below the first basement **except in case of K-class ester filled transformers**;

M/S Cargil gave presentation on K-class fluid filled transformers. The details of the presentation is at **Annexure-III**.

M/S M&I gave presentation on K-class fluid filled transformers. The details of the presentation is at **Annexure-IV**.

M/S ABB gave presentation on dry type transformers. The details of the presentation is at **Annexure-V**.

Dupont gave presentation on dry type transformers. The details of the presentation is at **Annexure-VI**.

Deliberations:

Regulations 44(2)(vii) (e)

Representative of GETCO recommended use of ester oil filled transformer and requested CEA to amend regulations for use of K-class oil in place of dry type transformers.

CEI, Maharashtra expressed that there is a need for the study of the K-class fluid filled transformers. He stated that necessary recommendations on this will be provided later.

Haryana, Gujarat, Telengana (many other states) also agree with Maharashtra.

Chief Manager Tata power, Mumbai stated that the K-class fluid filled transformers are being used in their area and are working satisfactorily. They are compact, can be overloaded without any problem. They have also ordered for the 220kV power transformer with K-class oil.

Director, DP&D Division, CEA stated that there is a oxidation problem in these type of oil, therefore, these need to be hermitically sealed and as such, there is a possibility of pressure build up problem inside the tank in case of fault.

Representatives of Cargil & M&I replied that transformers with K class oil are safe & used in many countries like Middle east, Japan, Europe and other counties like Brazil, Jordan where the climatic conditions are similar to India.

CEI to GoI suggested that the relevant data & regulations of these countries may be provided by the K-class fluid related manufacturers and they are agreed for the same.

CEI to GoI requested the states to study the matter in detail and regulation specific recommendations may be made to take a decision. **The issue is flagged for the next meeting.**

Regulations 44(2)(ix) & 44(2)(xi)

The participants from the states were of the views that since the proposal on Regulations 44(2)(vii) (e) has been deferred for the next meeting so decision on this proposal be deferred for the next meeting.

Regulations 44(2)(ix) – oil capacity

44(2)(ix) he shall ensure that the transformers of 10 MVA and above rating or in case of oil filled transformers with oil capacity of more than 2000 liters are provided with firefighting system as per IS - 3034: 1993 or with Nitrogen Injection Fire Protection system;

Proposed: 44(2)(ix). He shall ensure that the transformers of 10 MVA and above rating are provided with fire fighting system as per IS - 3034: 1993 or with Nitrogen Injection Fire Protection system.

Deliberations:

Representative of GETCO requested that rating may be increased from 10 to 25 MVA considering the difficulties in providing the fire fighting system as per IS - 3034: 1993.

CEI to GoI stated that the present deliberation is limited for the proposal given in the agenda. The proposal for increasing it from 10 to 25 can be consider later.

The proposals for amendment as given in the agenda under 42(2)(ix) was agreed by the participants from states.

ADDITIONAL AGENDA

Electrocution of wild animals such as elephants in the forest areas of the country

CEI to GoI stated that it has been reported by the MoE&F that a large number of wild animals are being electrocuted accidentally by coming in contact with the lines of voltage 33 KV and below passing through the forest area. The issue was deliberated with the MoE&F in detail wherein it was viewed that instead of overhead wires, ABC/covered conductors/underground cables should be taken through the forest corridors.

CEI, Karnataka stated that many Elephants have been electrocuted in their state. He suggested for the use of insulated cables instead of bare conductors.

CEI to GoI suggested that the height at the lowest sag point of the ABC/covered conductors may be more than elevated trunk height of the elephant i.e. over 6 metre so that elephant cannot damage these cable.

Participants from States agreed with the proposal.

Jurisdiction of the Central/State Electrical Inspectorate

Director, EI Division, CEA stated that as per the Rule 3: Applicability of rules, of “Qualifications, Powers and Functions of Chief Electrical Inspector and Electrical Inspectors Rules, 2006” notified by the Central Government on 17.08.2006, the electrical installation falling in the jurisdiction of the Central Government are as follows:

*“(i) a generating company wholly or partly owned by the Central Government;
(ii) any inter-State generation, transmission, trading or supply of electricity and with respect to any mines, oil-fields, railways, national highways, airports, telegraphs, broadcasting stations and any works of defence, dockyard, nuclear power installations;
(iii) National Load Despatch Centre and Regional Load Despatch Centre; and
(iv) any works or electric installation belonging to the Central Government or under its control.”*

Sometimes, it is observed that electrical installations such as ISGS, SEZs etc. are being asked by the State Inspectorates for carrying out the inspection through the State Electrical Inspectorate. This is in contravention to the above Rule.

CEI, Karnataka expressed that the SEZs are developed with in the state and are developed using the state finances. Therefore they should be in state jurisdiction.

Director , EI Division, CEA replied that the SEZ comes under the control of Ministry of Commerce and the same was clarified by the Ministry of Power that they are in Central Government Jurisdiction. This has been intimated to Tamilnadu & Andhra Pradesh earlier in 2006 and 2011 when the issue came up. The copy of the MoP order is at **Annexure-VII**.

Submission of proposals/comments regarding amendments in CEA (Construction of plants, lines and substation) Regulations:

Chief Engineer (SE&TD), CEA has requested all participants in the meeting to furnish the comments on the CEA (Technical Standards for Construction of Electric Plants and Electric Lines) Regulations which deals inter-alia with all voltage level transformers. He asked participants from States to comment or give their views that upto what voltage level (beyond 33 KV) we can go for K-class oil filled transformers for outdoor purposes so that their views/comments could be incorporated during revision of the CEA (Technical Standards for Construction of Electric Plants and Electric Lines) Regulations.

The meeting ended with vote of thanks to the Chair.