National Electric Power Regulatory Authority



Islamic Republic of Pakistan

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No. NEPRA/DG(M&E)/LAD-04/ 282

January 09, 2024

Chief Executive Officer Faisalabad Electric Supply Company (FESCO), Abdullahpur, Canal Bank Road, Faisalabad

Suject: ORDER OF THE AUTHORITY IN THE MATTER OF EXPLANATION ISSUED TO FESCO UNDER REGULATION 4(1) AND 4(2) OF NEPRA (FINE) REGULATIONS, 2021, ON ACCOUNT OF FAILURE TO EXECUTE EARTHING/GROUNDING OF HT/LT POLES/STRUCTURES IN ITS SERVICE TERRITORY.

Enclosed please find herewith the Order of the Authority (total 11 pages) in the subject matter

for compliance.

Enclosure: As above

(Engr. Mazhar Íqbal Ranjha)



National Electric Power Regulatory Authority

<u>ORDER</u>

IN THE MATTER OF EXPLANATION ISSUED TO FESCO UNDER REGULATION 4(1) AND 4(2) OF NEPRA (FINE) REGULATIONS, 2021, ON ACCOUNT OF FAILURE TO EXECUTE EARTHING/GROUNDING OF HT/LT POLES/STRUCTURES IN ITS SERVICE TERRITORY.

1. Faisalabad Electric Supply Company Limited (FESCO) (the "Licensee") was granted a Distribution License (No. 02/DL/2002) by the National Electric Power Regulatory Authority (the "Authority") on 02.03.2002, for providing Distribution Services in its Service Territory as stipulated in its Distribution License, pursuant to section 21 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 ("NEPRA Act").

Background:

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- 2. During the investigation conducted by NEPRA with respect to Fatal Accidents in DISCOs, it was observed that the distribution facilities of DISCOs such as poles/structures lack earthing/grounding which is one of the major causes of the occurrence of fatal accidents. The Authority while taking notice of such serious safety hazards directed the Licensee vide letter dated June 07, 2022, followed by reminders dated July 06, 2022, and August 02, 2022, to submit the data pertaining to the total number of poles/structures, number of poles/structures already earthed/grounded, and number of poles/structures to be earthed/grounded. Accordingly, the Licensee submitted the required information vide its letter dated June 26, 2022.
- 3. The Authority after carefully examining the data submitted by the Licensee called CEO of the Licensee vide letter dated September 26, 2022, for a meeting/hearing via Zoom at NEPRA Head Quarter with the direction to come up with a comprehensive plan along with specific timelines pertaining to execution of earthing/grounding of HT/LT poles/structures in its service territory, in order to avoid fatal accidents in future. The Authority also directed that the Licensee shall submit the response to specific queries/questions including, SOP of the Licensee pertaining to earthing/grounding of the poles/structures, scope of earthing in the contracts at the time of their installation, checking of poles/structures grounding at the time of handing over of the system from construction to operation departments, tackling these hazards in the absence of proper earthing/grounding, and time required to execute the earthing/grounding of 100% of the remaining poles/structures.
- 4. Accordingly, the said meeting/hearing was held on October 04, 2022, wherein, the Authority directed the Licensee to submit complete details of PCC poles and steel structures with and without earthing/grounding. The Authority further directed the Licensee to submit a comprehensive plan of the execution of earthing/grounding of poles & structures along with concrete timelines. Moreover, the Authority also desired

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that the Licensee should provide a mechanism on how they will efficiently perform the execution task within the minimum possible time. A letter dated October 28, 2022 containing all above directions was also sent to the Licensee.

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In addition to above, NEPRA Regional Office, Faisalabad, also reported and affirmed that in past contracts, the scope of earthing/grounding was only included in Steel Structures. However, in the latest contracts, the scope of earthing/grounding was included in both the Steel Structures and PCC poles and the same is present in the field too. The Regional Office further highlighted that Steel Structures installed in the past had earthing/grounding, however, the same has become ineffective due to deterioration and change of moisture contents at the sites over the passage of time. The same was also endorsed by the Licensee in its submitted replies.

In response to NEPRA's letter dated October 28, 2022, the Licensee vide its letter dated November 28, 2022, submitted its response against the aforementioned directions & queries of the Authority. The Licensee submitted that the execution of earthing/grounding of remaining structures would be done by end of the year December 2023. The detail of HT/LT structures already earthed or to be earthed as submitted by the Licensee is as under:

Total	Details of I	IT Poles/Str	uctures 🗥 👘	Details of LT Poles/Structures			Total -	Total
Number	Total	HT Poles/~	HT Poles/	Total	LT Poles/	LT Poles/	Number	Number
of HT/LT					Structures			of HT/LT
Poles/	of HT				have			Poles/
Structure	Poles/	Earthing					Structure	Structure
S	Structures			Structures		1.75	(a) (a) - (a) - (b) - (b) - (b)	
							Earthing	Earthed
190,528	102,024	51,634	50,390	88,504	45,168	43,336	96,802	93,726

- In this regard, it was observed that the Licensee submitted a plan upto the extent of HT/LT structures only, and it did not submit anything about PCC poles. It is pertinent to highlight that the earlier submitted details by the Licensee also pertained to structures only. Though, the Licensee is committed to complete the earthing/grounding of structures by December 2023, however, it is reluctant to provide any detail with regard to the execution plan of PCC poles, which is equally important as structures.
- It was further highlighted during the hearing dated October 04, 2023, the Licensee also misrepresented the figures before the Authority, as it was claiming that the provided numbers were of both PCC Poles and Steel Structures. However, at later stage, it was revealed that the said numbers only pertained to steel structures. The Licensee has never provided any details of PCC Poles to the Authority despite repeated directions issued by the Authority.
- Moreover, the Licensee did not shared any progress regarding the execution of earthing/grounding of structures even though the Licensee was directed to submit monthly progress on regular basis. All this clearly indicates that the Licensee does not have any plan to execute this important task and shows non-seriousness of the Licensee towards inculcating a safety culture in its service territory. The Licensee should have realized that operation of poles/structures without earthing/grounding in the field is highly dangerous and can lead to the occurrence of fatal accidents at any time.



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10. Therefore, the Authority decided to initiate legal proceedings against the Licensee under NEPRA Fine Regulations, 2021...

Explanation:

- 11. In view thereof, an Explanation was served to the Licensee under Regulation 4(1) and 4(2) of NEPRA (Fine) Regulation, 2021, vide NEPRA's letter dated April 27, 2023, on account of violation of Performance Standards, Distribution Code, Power Safety Code, and other applicable documents. The salient points of the Explanation are as under:
 - 3. WHEREAS, pursuant to section 21(2)(f) of the NEPRA Act, the Licensee is required to follow the performance standards laid down by the Authority for the distribution and transmission of electric power, including safety; and
 - 4. WHEREAS, pursuant to Rule 4(g)(ii), Overall Standards 7-Safety of NEPRA Performance Standards (Distribution) Rules:

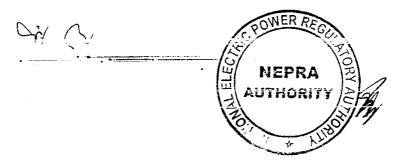
"A distribution company shall ensure that its distribution facilities do not cause any leakage of electrical current or step potential beyond a level that can cause harm to human life, as laid down in the relevant IEEE/IEC Standards; prevent accessibility of live conductors or equipment; and prevent development of a situation due to breakdown of equipment which results in voltage or leakage current that can cause harm to human life, property and general public including without limitation, employees and property of the distribution company."

5. WHEREAS, according to clause SR 4 Safety Management Criteria of Distribution Code:

"A distribution company shall ensure that its distribution facilities do not cause any leakage of Electrical Current or Step Potential beyond a level that can cause harm to human life, as laid down in the relevant IEEE/IEC Standards; prevent accessibility of live conductors or equipment; and prevent development of a situation due to breakdown of equipment which results in voltage or leakage current that can cause harm to human life, property and general public including without limitation, employees and property of the distribution company."

6. WHEREAS, as per clause DDC 4, Design Code- Earthing of Distribution Code:

"...The earthing of a distribution transformer, the neutral, and body of the transformer should be connected to ground rods as per IEC and PSI Standards Design Specifications. Earthing of Consumer Service and its meter shall be as per design standards adopted by the Licensees; and consistent with IEC, and IEEE Standards. The earth resistance of the distribution transformers and HT/LT structures/poles shall not be more than 2.5 Ω and 5 Ω respectively."



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The Licensee shall follow suitable and necessary provisions_regardingprotection system practices and co-ordination such as the following but not limited to achieve the aims of proper functioning of the distribution system of the Licensee at all times:

... Provide protective earthing devices.

. WHEREAS, as per clauses 12.2.4 and 12.2.5 of Chapter 12 of the Consumer Service Manual:

"12.2.4. The earthing systems installed shall be dimensioned and regularly tested to ensure protection from shock hazards.

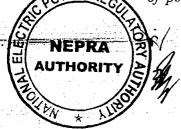
12.2.5. The steel structure installed on the public places shall be earthed at one point through steel/copper conductor, in accordance with the DISCO laid down procedures."

WHEREAS, during the investigation conducted by NEPRA with respect to fatal accidents in DISCOs, it was observed that the distribution facilities of DISCOs particularly HT/LT poles/structures lack earthing/grounding which is one of the major causes of the occurrence of fatal accidents. The Authority took notice of such serious safety hazards and directed to obtain data from all the DISCOs including the Licensee, with respect to the total number of HT/LT poles/structures, the number of HT/LT poles/structures already earthed/grounded, and the number of HT/LT poles/structures to be earthed/grounded. The same was obtained vide Licensee's letter dated June 26, 2022, and the detail is as under:

Total	Details of HT Poles/Structures			Details of L	T Poles/Struc	Total	Total	
Number of HT/LT Poles/ Structures	Total Number of HT Poles/	HT Poles/ Structures have Earthing	HT Poles/ Structures to be Earthed		LT Poles/ Structures have Earthing	Structures to be,	Number of HT/LT Poles/ Structures	HT/LT Poles/ Structures
	Structures			Structures			have Earthing	to be Earthed
				Sector Sector			45	
190,528	102,024	51,634	50,390	88,504	45,168	43,336	96,802	93,726

The aforementioned data was reviewed and observed that the Licensee only submitted details of steel structures.

10. WHEREAS, a hearing/meeting on the matter was also held on October 04, 2022, wherein the representatives from all DISCOs including CEO FESCO participated. During hearing/meeting, the Authority directed all DISCOs along with the Licensee to submit complete details of PCC Poles and steel structures with and without earthing/grounding. The Authority further directed the Licensee to submit a comprehensive plan of the execution of earthing/grounding of poles/structures along with concrete timelines. Moreover, the Authority



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desired that DISCOs should provide a mechanism on how they will efficiently perform the execution task within the minimum possible time, however, the Licensee has failed to do so; and

- 11. WHEREAS, vide NEPRA's letter dated October 28, 2022, the Licensee was again directed to submit the said information. In response, the Licensee vide its letter dated November 28, 2022, submitted its reply, wherein, the Licensee interalia, stated that the execution of earthing/grounding of remaining structures would be done by end of the year December 2023. In this regard, it is observed that the Licensee submitted a plan upto the extent of HT/LT structures only, and it did not submit anything about PCC poles. It is pertinent to highlight that the earlier submitted details by the Licensee also pertained to structures only. Though, the Licensee is committed to complete the earthing/grounding of structures by December 2023, however, it is reluctant to provide any detail with regard to the execution plan of PCC poles, which is equally important as structures. It is further highlighted that during the hearing dated October 04, 2023, the Licensee also misrepresented the figures before the Authority, as it was claiming that the provided numbers were of both PCC Poles and Steel Structures. However, at later stage, it was revealed that the said numbers only pertained to steel structures. The Licensee has never provided any details of PCC Poles to the Authority despite repeated directions issued by the Authority. Moreover, the Licensee has not shared any progress regarding the execution of earthing/grounding of structures even though the Licensee was directed to submit monthly progress on regular basis. Hence it is unable to assess whether the Licensee will meet its deadline of December 2023, or otherwise. All this clearly indicates that the Licensee does not have any plan to execute this important task and shows non-seriousness of the Licensee towards inculcating a safety culture in its service territory. The Licensee should have realized that operation of poles/structures without earthing/grounding in the field is highly dangerous and can lead to the occurrence of fatal accidents at any time; and
- 12. WHEREAS, it is a matter of record that despite repeated and continuous correspondence, the Licensee has failed to produce any concrete plan indicating specific timelines for executing the earthing/grounding of HT/LT poles/structures on a war footing basis. Hence, it can be said that the Licensee has, prima facia, violated Section 21(2)(f) of the NEPRA Act, Article 11 of the Distribution License read with Rule 4(g) of the NEPRA Performance Standards (Distribution) Rules, Clause 4 of Safety Requirements, Clause 4 of Design Code & Clause 1 of Protection Requirements of the Distribution Code and Clause 12.2 of Chapter 12 of the Consumer Service Manual; and..."
- 12. The Licensee vide its letter dated May 16, 2023, submitted its response. The summarized points of the same are below:

"It is deemed appropriate that before making Para wise reply to the explanation, the steps/efforts taken by NEPRA to promote the safety culture to minimize the fatal/non-fatal accidents of General Public by adopting the earthings / groundings of HT / LT poles and distribution transformer sub stations amongst its licensees are appreciable. It has oftently been observed that failure of earthing of transformers and HT/LT structure/pole is the major cause of occurrence of fatal/non-fatal

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accidents, but by the grace of Allah Almighty there is zero fatality/injuries of general public occurred owing to failure of grounding system in FESCO more than 4 years.

Initially FESCO would like to illustrate brief account of the efforts made and the steps taken to promote the safety culture towards employees and general public specifically by earthings/groundings of HT/LT poles and distribution transformer sub stations. FESCO is proactive, conscious and quite vigilant to cause any harm to human life, property and general public including its own employees. In this regard, FESCO is determined to maintain high standards of care to avoid any leakage of electrical current and safe working practices.

Para wise reply to the aforesaid notice is as under:-

- 1. The contents of the paragraph are not denied as it relates to the powers of NEPRA under the regulation of generation, transmission and distribution of electrical power act, 1997 (NEPRA act 1997).
- 2. The contents of this paragraph are admitted as FESCO is a licensee of NEPRA.
- 3. In reply to the contents of this paragraph it is submitted that power of the NEPRA follow the performance standards laid down by the authority for distribution and transmission of electrical power including safety is also not denied being true in legal position.
- 4. In reply to the contents of this paragraph it is submitted that FESCO is fully ensuring that its distribution system do not cause any leakage of electrical current or step potential beyond a level that can cause harm to human life, as laid down in the relevant IEEE/IEC standard; prevent accessibility of live conductor or equipment etc.
- 6. In reply to the contents of this paragraph it is submitted that FESCO is strictly monitoring to maintain mentioned IEEE/IEC standards i.e. earthing resistance of the distribution transformers and HT/LT structures/poles shall not be more than 2.5Ω and 5Ω in true sense while earthing the system.
- 7. In reply to the contents of this paragraph it is submitted that FESCO is already being following protection system practices and system co-ordination of Distribution Code of NEPRA.
- 8. In reply to the contents of this paragraph, it is submitted that checking of earthing is a continuous process and field formations are doing it on periodic basis.
- 9. In reply to the contents of this paragraph, it is submitted that FESCO was the first distribution licensee who have conducted survey on the directions of NEPRA authority on war footing basis. Initially, in the first step, pole to pole survey of steel structures was completed before the meeting held on 04-10 2022 at NEPRA.



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- 10. In reply to the contents of this paragraph, it is submitted that FESCO on the directions of NEPRA Authority formulated following road map for the earthing of distribution system.
 - a. FESCO put up the case before BOD and got approval for the purchase of material, execution of work and budget accordingly.
 - b. FESCO then purchased the material, required for earthing and ensures its availability at all field stores of FESCO.
 - c. Afterwards, All the Divisions under FESCO floated the tenders and work orders have been awarded to the contractors and started physical work at work site.
- 11. In reply to the contents of this paragraph it is submitted that FESCO in his reply submitted vide letter dated November 28. 2022 humbly mentioned that:

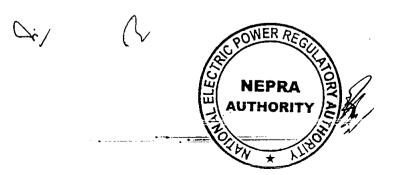
"FESCO has started the survey on war footing basis regarding HT/LT PC Poles/PC Spun Hollow Poles at the sub divisional level which will be completed soon"

It is pertinent to mention here that NEPRA should have to arrange a suitable meeting/webinar in order to formulate a suitable strategy for earthing of PC poles as most of the PC pole are not in a position to be earthed properly because their earthing points were buried in soil due to raising of soil level. The poles where earthing points are visible will be provided earthing arrangements gradually after completion of survey.

- 12. In reply to the contents of this paragraph, it is submitted that FESCO never ever disobeyed any instruction of NEPRA authority and already following the plan shared earlier and, in this regard, completed following tasks with figures:
 - a. Survey of HT/L T lines and Distribution Transformer Sub-Stations:-

With reference to above, it is stated that FESCO had carried out the comprehensive survey of HT/LT lines and Distribution transformer sub stations, as detailed below:

Total	Details of HT Poles/Structures			Details of LT Poles/Structures			Total	Total
Number of HT/LT Poles/ Structures	Total Number of HT Poles/ Structures	HT Poles/ Structures have Earthing	HT Poles/ Structures to be Earthed	Total Number of LT Poles/ Structures	LT Poles/ Structures have Earthing	LT Poles/ Structure s to be Earthed	Number of HT/LT Poles/ Structures have Earthing	Number of HT/LT Poles/ Structures to be Earthed
190,528	102,024	51,634	50,390	88,504	45,168	43,336	96,802	93,726



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b. Approval from BOD FESCO:

Material Name	Unit	Quantity	Per Unit Rate	Total Rate (Million)
Total Earth rod with	No.	143086	1488	212.912
clamp & Connector for HT/LT Structures & T/F sub station				
Total GS wire 10 mm for HT/LT Structures & T/F sub station.	Kg.	572344	212	121.337
Total PG T-150 for sub stations	No.	24680	122	3.011
Total Material Cost		· · · ·		337.260
Total Installation/Labor Cos	st in			45.394
Grand Total				382.654

FESCO put up the case before BOD and got approval for purchase of material, execution of work and approval of budget, detail is as under:

c. Purchase of Material:

FESCO has purchased the material, required for earthing and is available in FESCO Stores, detail is as under:

Material Name	Unit	Quantity
Total Earth rod with clamp & Connector for HT/LT Structures & T/F sub station	No.	133000
<i>Total GS wire 10mm for HT/LT Structures & T/F sub station</i>	Kg.	45 M. Ton
Total PG T-150 for sub stations	No.	12000

d. Floating of tenders & work orders awarded to contractors:

All the Divisions under FESCO floated the tenders and work orders have been awarded to the contractors. Physical work has been started; progress is being monitored and will be submitted accordingly..."

Hearing:

13. Furthermore, in order to satisfy the requirement of law, the Authority decided to provide an opportunity of a hearing to the Licensee in light of Regulation 4 (5) of NEPRA (Fine) Regulations, 2021, before further proceeding in the matter. Accordingly, the said hearing was earlier held on July 19, 2023, however, the CEO of the Licensee, was not available during the hearing without informing NEPRA. The Authority showed serious displeasure upon the absence of CEO of the Licensee, and postponed the hearing with the direction to representatives of the Licensee to ensure the presence of CEO in the next hearing date. Later, the said hearing was held on August 17, 2023, as public



hearing rather than party hearing, wherein, CEO of the Licensee along with his team participated and made the following submissions:

- i. FESCO submitted that it already completed the survey of HT/LT Steel Structures before the NEPRA's letter.
- ii. FESCO has purchased approximately 143,000, earth rods, and 572,000 kg of earth wire at the expense of 342 Million Rupees.
- iii. As per the survey, the earthing of approximately 50% of Steel Structures is intact and the rest 50% of poles/structures are required to be earthed.
- iv. Earlier, the PCC poles (Spun + H Type) did not have the provision of earthing as per WAPDA SOP, and neither the earthing material cost was included in their estimates in any form.
- v. However, when NEPRA directed FESCO to execute the earthing of PCC poles, we came to know that the earthing point of poles installed in the 90's had gone into the ground. Accordingly, the survey of PCC poles was started and around 25% of the same has been completed. Further FESCO will ensure its completion in the coming 2-3 months.
- vi. FESCO further committed that the execution of earthing of HT/LT poles/structures will be completed through its own resources.
- vii. FESCO submitted that the earthing of HT/LT Steel Structures will be completed by December 31, 2023.
- viii. FESCO has purchased the most modern earth resistance testers in order to check the earth resistance value of the poles/structures.

Analysis/Findings:

14. The Licensee has submitted that it is fully ensuring that its distribution system does not cause any leakage current or stop potential beyond a level that can cause harm to human life, as laid down in the relevant IEEE/IEC standard.

The Authority has considered the submissions of the Licensee and observes that the Licensee's submissions are far away from ground realities. If the submissions of the Licensee are assumed to be true, then there should have been zero fatalities in its territory. However, five fatalities of its employees occurred in FY-2020-21, six fatalities (3 Employees and 3 Public) occurred in FY 2021-22, and four fatalities (2 Employees and 2 Public) occurred from July 2023 onwards in its service territory. This reveals that the Licensee has failed to rectify serious safety hazards, which caused the leakage current & harm to human life, and subsequently their death.

15. The Licensee has submitted that it is strictly monitoring to maintain IEEE/IEC standards by keeping earthing resistances within permissible limits. The Licensee has further submitted that it is already following protection system practices and system coordination of the distribution code of NEPRA. The Licensee has also added that the

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checking of earthing is a continuous process and field formations are doing it on a periodic basis.

The Authority has gone through the submissions of the Licensee and observes that the same are in contradiction with the findings of NEPRA Regional Office, Faisalabad. As per the findings of the Regional Office, Faisalabad, the Steel Structures installed in the past had earthing/grounding, however, it has become ineffective due to deterioration and change of moisture contents at the sites over the passage of time. The same was also endorsed by the Licensee in its submitted replies. Hence, it can be said that the Licensee has failed to check & ensure its earthing along with its resistance value in a periodic manner. Further, it is on record that during the last few years, a number of casualties occurred in the Licensee's territory due to the failure of the protection system. Therefore, the submissions of the Licensee regarding continuous monitoring of earthing/grounding are not based on facts.

The Licenee has submitted that it was the first DISCO, that has surveyed the poles/structures on a war footing basis, and upon the directions of the Authority, a road map for earthing of the distribution system has been formulated. The Licensee has further submitted that materials have been procured and tenders have been floated at the Circle level for execution of earthing. Additionally, the Licensee has submitted the quantified numbers of material procured and details of work orders issued to the contractors.

In this regard, the Authority has considered and examined the submissions of the Licensee and is of the view that the Licensee has started to carry out the task after the direction of NEPRA. However, the Licensee being a distribution licensee should have initiated such efforts a lot earlier which it failed to do. NEPRA has taken up this matter since June 2022 and repeatedly directed the Licensee to submit a concrete plan and subsequently provide monthly progress reports. However, no single progress report has yet been submitted by the Licensee which again shows that the Licensee has not earthed any single pole/structure despite the lapse of more than one year. Hence it appears that the submissions of the Licensee are only on paper but not on the ground.

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16.

The Licensee has submitted that it has started the survey of HT/LT PCC poles at the subdivisional level on a war footing basis which will be completed soon. The submissions of the Licensee have been considered by the Authority and observes that since October 2022, time and again the Licensee was directed to submit the details of HT/LT PCC poles and subsequent execution of earthing plan for the same. However, despite the lapse of almost one year, the said survey has still not been completed which shows the Licensee's poor commitment to eliminate this severe safety hazard. Consequently, it appears that the Licensee's submissions exist predominantly on paper only and lack tangible implementation on the ground. Hence, it is constrained to believe that the Licensee has failed to inculcate safety culture in its service territory.



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18. Decision

After due deliberations and taking into account the submissions/arguments made by the Licensee during the hearing and in light of the NEPRA Act, NEPRA (Fine) Regulations, 2021, and other applicable documents, the Authority is of the considered opinion that the Licensee has failed to provide any satisfactory reply to the Explanation served to it, therefore, the Authority hereby decides to issue a Show Cause Notice to the Licensee in terms of Regulations 4(8) & (9) of the NEPRA (Fine) Regulations, 2021.

AUTHORITY

Rafique Ahmed Shaikh Member (Technical)

Engr. Maqsood Anwar Khan Member (Licensing)

Mathar Niaz Rana (nsc) Member (Tariff & Finance)

Amina Ahmed Member (Law)

Waseem Mukhtar Chairman

WSm

2024 Dated



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