

E-119/C-92-318 ORDER INITIATING INVESTIGATION

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

Don Storm	Chair
Tom Burton	Commissioner
Cynthia A. Kitlinski	Commissioner
Dee Knaak	Commissioner
Norma McKanna	Commissioner

In the Matter of the Complaint
Against Lake Region Cooperative
Electric Association

ISSUE DATE: November 17, 1992

DOCKET NO. E-119/C-92-318

ORDER INITIATING INVESTIGATION

PROCEDURAL HISTORY

On April 16, 1992, the Commission received a formal complaint signed by 57 members of Lake Region Cooperative Electric Association (Lake Region or the Company). The filing expressed dissatisfaction with Lake Region's response to complaints about stray voltage on dairy farms served by the Company. The Complaint was verified on May 15, 1992, by one of the signatories to the complaint, Lonnie Nelson.

On May 27, 1992, the Commission met to consider requiring an answer to the Complaint. The Commission issued an Order on June 4, 1992, requiring the Company to file an answer. Lake Region filed its answer on June 25, 1992. The Company also filed a petition to dismiss the complaint or, in the alternative, to make the Complaint more definite and certain as to the allegations contained therein.

On August 18, 1992, the Department of Public Service (Department) submitted comments on the Complaint. Two days later, on August 20, 1992, the Environmental Quality Board (EQB) filed a resolution recommending the Commission initiate an investigation of utility grounding practices. On August 21, 1992, the Department filed a petition to intervene. Otter Tail Power Company (Otter Tail Power) filed comments on September 13, 1992. On October 1, 1992, a pre-hearing conference was held to clarify issues in the Complaint and discuss procedural issues related to the Commission's consideration of the Complaint. Lake Region, the Complainants, the Department, Commission staff and Commission counsel participated in the conference. The conference served to clarify aspects of the Complaint. It also identified the Complainants, Lonnie Nelson and Darrel Franze. Commission staff provided minutes of this conference to the participants on October 5. Lake Region filed a letter clarifying the minutes on

October 13, 1992. Commission staff sent revised conference minutes to the parties on October 14, 1992. These minutes incorporated Lake Region's clarifications.

On October 22, 1992, Lake Region filed an amended answer to the Complaint based on the pre-hearing conference. The amended answer included the Company's proposed agreements offered to the Complainants. On October 29, 1992, the Complainants submitted comments addressing the Company's amended answer.

On November 4, 1992, Otter Tail Power filed a petition to intervene in this docket. Otter Tail's petition states that it may be affected by decisions in this case, and that the resolution of stray voltage issues should be left to the Commission's rulemaking docket E-999/R-92-245.

This matter came before the Commission on November 9, 1992 and November 12, 1992.

FINDINGS AND CONCLUSIONS

Introduction

This Complaint concerns the subject of "stray voltage" on dairy farms. Stray voltage in this context is a term of art, and authorities on the subject disagree on how it should be defined. Typically, electricity travels through a utility's distribution system in a closed loop. A secondary loop carries electrical energy from the utility's distribution system to the customer. In simplest terms, electrical energy travels to users through one wire, and returns to the point of origin in another wire called the "neutral." A portion of this electrical energy leaves the normal distribution system through a grounding wire, and travels through the ground or other structures on its way back to its source. Stray voltage, in its broadest sense, refers to the electrical energy from various sources outside the normal paths of distribution, and its impact on livestock that come in contact with it.

The issues raised in this Complaint concern the effect this stray electrical energy has on the health and productive capacity of the Complainants' dairy herds. According to the Complainants, electrical energy outside the normal distribution system conductors has seriously harmed the health and productivity of their cows. The Complainants are asking for more complete investigations into the electrical environment of their dairy herds. The Complainants are also requesting specific measures to eliminate or reduce the presence of stray voltage on their farms. The Commission will address the former, but concludes that an Order prescribing specific remedies would be premature at this point in the proceeding.

Petitions to Intervene

Both Otter Tail Power Company and the Department have filed petitions asking to intervene in this proceeding. Intervention is governed by Minn. Rules, part 7830.2200, which provides in relevant part:

Any person desiring to be made a party to a pending proceeding may petition for leave to intervene therein. The petition with proof of service shall be filed with the commission at least ten days prior to the date set for hearing, but not thereafter except for good cause shown.

A petition to intervene shall allege the grounds for the proposed intervention and the specific interest of the petitioner in the proceeding . . . The allegations shall be reasonably pertinent to the issues involved in the principal pleadings, and shall not unduly broaden the issues.

The Department filed its petition on August 21, 1992, over 60 days in advance of the November 9 hearing. Therefore, the Department's filing was timely. The Commission will grant the Department's petition pursuant to Minn. Stat. § 216A.07, subd. 3, which entitles the Department to intervene in all proceedings before the Commission.

Otter Tail filed its petition on November 4, 1992. October 30, 1992 was the deadline to file a petition to intervene under Minn. Rules, part 7830.2200. Therefore, Otter Tail's filing was not timely and will be rejected on that basis. Otter Tail and others may have the opportunity to intervene at a later stage in this proceeding. The Commission will evaluate any timely petitions on their merits if filed in the future.

Jurisdiction and Adequacy of Complaint

The Commission has jurisdiction over this proceeding under Minn. Stat. § 216B.17. This provision authorizes the Commission to investigate the service standards and practices of any utility, including a cooperative electric association, on the Commission's own motion or upon complaint by 50 customers of the utility. The Complaint in this proceeding clearly meets these requirements. It was signed by over 50 customers of Lake Region, and raises serious issues regarding the adequacy of the Company's service. Indeed the Complainants' allegations relate directly to the Company's standards and practices governing its distribution system on or around dairy farms. This falls squarely within the terms of Minn. Stat. § 216B.17, and gives rise to Commission jurisdiction.

Lake Region argues that the Complaint lacks the requisite specificity under the Commission's Rules of Practice and Procedure, Minn. Rules, parts 7830.1300, 7830.1400 and 7830.1600.

Accordingly, the Company maintains that the Commission should dismiss the Complaint or require the Complainants to refile the Complaint with changes that provide a more certain and definitive account of the allegations and the legal basis for relief. The Commission rejects the Company's challenge to the sufficiency of the Complaint. The Complaint identifies stray voltage as its concern, and asks for very specific relief. The Complainants convey their concept of stray voltage in their request for specific electrical test parameters that encompass amperage, DC currents and "high frequency spikes." The Complainants' view of stray voltage was clarified further at the pre-hearing conference. This is sufficient for pleading purposes.

The Commission recognizes that the Complaint lacks the formality and polish to which it is accustomed. However, the Commission also recognizes that the Complainants are neither represented by Counsel nor familiar with formal proceedings of this kind. The Commission is satisfied that the Complaint contains the information essential to provide the Company with an adequate basis for response. This is particularly true in light of the October 1, 1992 pre-hearing conference, which gave all parties the opportunity to clarify the issues raised by the Complaint. The Complaint alleges deficiencies in the Company's handling of grievances involving stray voltage on dairy farms. These alleged deficiencies are clarified by the specificity of the remedies the Complainants are requesting. No further pleadings are necessary.

Further Investigation

The Complainants in this proceeding, Lonnie Nelson and Darrell Franze, question whether the Company's investigative practices have provided an adequate assessment of the problem, and whether the Company has taken reasonable steps to alleviate the situation. The Complaint requests the following relief: (1) an investigation of the entire electrical environment on the Complainant's farms, including measurements and analysis of ground currents, DC currents and amperage; (2) the installation of isolating devices at the Company's expense and without waiver of Company liability; and (3) the elimination or relocation of the primary neutral grounding connection to eliminate the on-farm impact of stray voltage coming from the Company's primary system.¹

¹ The "primary system" is the loop of energy flow between the utility's substation and the transformer on the utility pole. The secondary system is the loop of energy flow between the transformer and the customer. The primary neutral grounding connection allows current to exit the primary system and enter the ground. Grounding is intended to deal with large, momentary surges of electrical energy, which may result, for example, from lightning strikes during a storm or equipment failures.

The Commission finds that it needs further information to proceed. Lake Region's investigations on the Complainants' farms have focused exclusively on voltage measurements between two contact points that cows are likely to touch. This, in theory, measures the force of the shock to a cow when electrical current enters its body through one contact point and exits through another. For example, current traveling through a metal water pipe may enter a cow's mouth when it drinks from a metal trough and exit the animal's hoof into the ground. The higher the voltage between these points, the greater the shock to the cow.

The Complainants and the Department maintain that the Company's focus has been too narrow, and that an investigation of the Complaint must consider a broader range of electrical phenomena associated with electrical energy that escapes the confines of the normal distribution system. The Commission agrees, and believes that a full evaluation of the Complaint in this case must, at a minimum, assess the general electrical environment to which the cows may be subjected. This requires, for example, measurements of amperage as well as voltage. It also suggests the need for an assessment of the dynamics of the electrical environment, including changes in current that accompany alterations in wiring configurations.

The Commission will initiate a more comprehensive examination of the electrical environment on the Complainants' dairy farms. Independent investigators with expertise in this area will conduct the assessment under the direction of the Commission. The test protocols recommended by Professor Bodman in the Department's June 22, 1992 comments on stray voltage rulemaking address most of the Commission's concerns. Therefore, the investigators will be expected to conduct their investigation consistent with these protocols.² In addition, the investigators will also be expected to (1) measure current and amperage as well as voltages, and (2) perform tests when the primary neutral grounding wire is disconnected as well as when it is connected.

The Commission will contract with Riley Hendrickson and John Gagnon to conduct the investigation. These individuals are recognized stray voltage investigators in Minnesota and both meet with the approval of Complainants and the Company. Commission staff will provide detailed written protocols based on this Order to the investigators before they begin. The investigators will be expected to adhere strictly to these protocols and to report their findings to the Commission by December 31, 1992.

² Mr. Bodman is an Associate Professor and Extension Agricultural Engineer at the University of Nebraska, Lincoln. He is a nationally recognized expert on stray voltage.

ORDER

1. The Commission has jurisdiction over this Complaint.
2. The Company's motion to dismiss the Complaint is denied.
3. The Company's motion to require the Complainants to make their petition more definite and certain is denied.
4. The Commission shall initiate and administer an investigation of the electrical environments on both Complainants' farms. The investigation shall be consistent with this Order and with written protocols developed by Commission staff.
5. The investigators shall provide the Commission with the results of their assessments by no later than the end of the business day on December 31, 1992.
6. This Order shall become effective immediately.

BY ORDER OF THE COMMISSION

Richard R. Lancaster
Executive Secretary

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