

STATE OF NORTH DAKOTA

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CERTIFICATION

COUNTY OF BURLEIGH

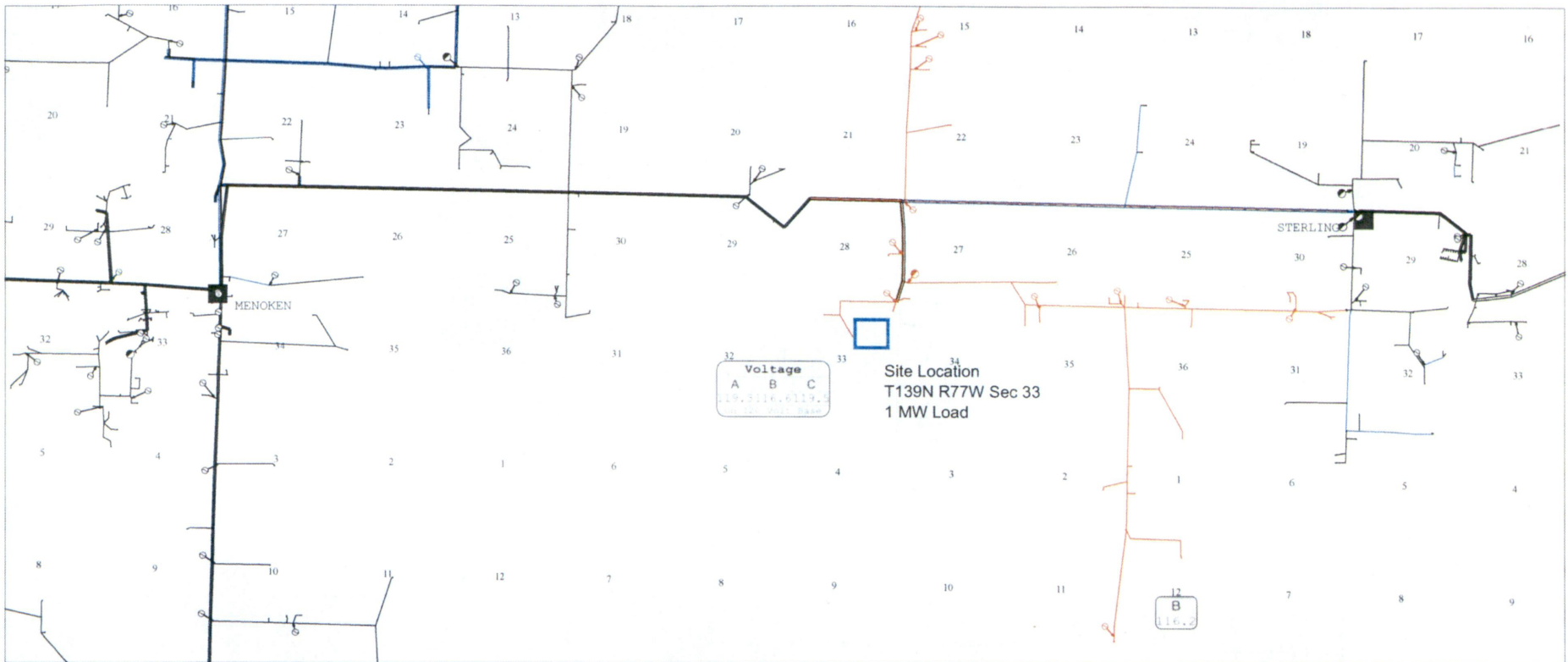
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I, the undersigned, as Executive Secretary of the Public Service Commission of the State of North Dakota and Custodian of the records thereof, do hereby certify that the attached is a true and correct copy of Capital Electric Cooperative's Late-filed Exhibit G, Voltage Report, which was docketed on November 4, 2015, to correct an error made when docketing Docket No. 57 (CR Exhibit 36 in Docket No. 74), in Montana-Dakota Utilities Co., a Division of MDU Resources, Menard Inc. – Burleigh County, ND, Public Convenience & Necessity, Case No. PU-13-871, which appears on file in the office of the Public Service Commission of the State of North Dakota.

IN WITNESS WHEREOF, I have set my hand and affixed the seal of the Public Service Commission in the city of Bismarck, North Dakota, this **5th** day of **November, 2015**.

(SEAL)

Darrell Nitschke
Executive Secretary
Public Service Commission
State of North Dakota



Voltage Drop from Menoken Substation
Existing System

Late Exhibit G, Page 2

Clarifications for Late Exhibit G

Mr. Kuntz asked:

Could you check with CEC to obtain and file as part of the exhibit at least the following study information: (1) the assumed load (kw or mw) at the Menards site; (2) whether the Menards location used in the study was the entry point of the site, the first padmount transformer, or the last padmount transformer; (3) the substation voltage used in the study; and (4) whether the voltage shown at the Menards site is at the primary or secondary level. Thanks.

CEC's response to Mr. Kuntz's request:

- 1.) 1 MW
- 2.) Entry point
- 3.) 7.2 KV
- 4.) Primary

Mr. Kuntz's follow up question:

Regarding question 3, what is the regulated output voltage (on a 120 volt base) at the Menoken substation needed to obtain voltages shown in the study at the Menards site?

CEC's response:

The voltage level at the Menoken substation is 122 with a bandwidth of 2 volts.

Mr. Kuntz's additional question:

As I understand, the voltage level and output voltage are two different values. Please provide the output voltage at the Menoken Sub in order to obtain the voltages (119.3, 116.6 and 119.5) shown in the study at the entry point to the Menards site. Thank you.

CEC's response:

The output voltage at the substation is 122 volts on a 120 volt base. What that means is 120 volts = 7,200 volts. The Substation transformer is a 41.6 kv high side and it steps it down to 7,200 volts or 7.2 kv. So coming out of the substation transformer it is 120 volts, it goes to the voltage regulators and the voltage regulators step it up to 122 volts or 7.32 kv. Depending on the load on each phase the voltage regulators try to maintain the 122 volts at the substation. That is why each phase has a different voltage at the Menards site. HDR used the peak loading for the circuit and then added the 1 MW load for Menards. Like I said before we can up the voltage on B phase by switching some load on that phase to A and C phases and transferring some of the B phase load to the Sterling Substation. Hopefully this explains what the voltage is at the substation.