



City of Grand Island

Tuesday, April 27, 2010

Council Session

Item G10

**#2010-120 - Approving Bid Award - Burdick Unit #2 Generator
Breaker Addition**

Staff Contact: Gary R. Mader

Council Agenda Memo

From: Gary R. Mader, Utilities Director
Dale Shotkoski, City Attorney

Meeting: April 27, 2010

Subject: Burdick Unit #2 Generator Breaker Addition

Item #'s: G-10

Presenter(s): Gary R. Mader, Utilities Director

Background

The City electric system utilizes a 115,000 volt (115kV) transmission line loop to provide the backbone of the electric distribution system. Feeder circuits emanate from each of seven 115kV electric substations located across the City. Additionally, the Electric Department Power Plants and regional grid interconnections also connect to the Grand Island system at three of the 115kV electric substations. The largest of these substations is Substation H located on the eastern portion of the system. At this substation are the three older steam electric generator units, three combustion turbines and two 115 kV loop transmission line interconnections. Feeder circuits from this station serve approximately 10,000 customers. Department engineering staff routinely reviews relaying and system configurations to ensure maximum redundancy in order to provide uninterrupted service to our customers. A recent review of Substation H revealed a single contingency situation that could result in the failure of the entire substation. The failure of breaker H-4-3, one of 19 breakers on the 115kV side of that substation, would cause the entire substation to trip. Three schematic drawings of the substation are attached to illustrate the failure mechanism. The breaker at issue is shown enlarged for easy identification on the attached schematics.

The “Normal Configuration” (Figure #1) schematic illustrates the normal condition of the substation. Red color indicates a breaker is closed and the adjacent lines are energized. You will note that four breakers in the substation are shown green, which indicates opened and the lines between them are shown in black indicating a de-energized condition. The open breakers are associated with the #2 and #3 Burdick Station Power Plant units. These older generators are run for emergency and reserve requirements.

The “Before Burdick Modification” (Figure #2) schematic illustrates the condition of a failure of breaker H-4-3. At 115,000 volts, failure of equipment is a major concern and

protective relaying provides immediate isolation of the failed component by tripping all adjacent equipment through which power might be fed to the failed component. The breakers shown within the dashed green line on the #2 schematic would be tripped on H-4-3 failure, resulting in the entire substation being de-energized. While some of the breakers remain closed, the relaying trip isolates all power supplies to the feeder circuits in the substation, which would be located off the page to the left of the schematic.

The “After Burdick Modification” (Figure #3) schematic illustrates the condition where the breakers associated with the Burdick Station Unit #2 generator (H-1-1 and H-1-2) can be configured in a normally closed condition, so that even with a failure of breaker H-4-3, Substation H remains energized and service to customers is maintained. Since breakers H-1-1 and H-1-2 are directly connected to a power generator, isolation of the unit when it is not on-line must be maintained. That can be accomplished by adding a single breaker at the #2 Generator as shown circled at the upper right of this schematic.

In order to enhance the reliability of the electric distribution system by adding redundancy to Substation H, department engineering staff developed a Request for Proposals for Engineering Services for modification of Substation H to add a breaker and required auxiliary equipment for the #2 generating unit.

An engineering services contract to add the generator breaker and auxiliary equipment at Burdick Generating Station Unit 2 was awarded to Black & Veatch at the Council meeting of October 13, 2009. This project is for the purchase of a generator breaker and auxiliary equipment to be installed by City of Grand Island personnel to provide protection between the Unit #2 generator and Sub H. Specifications for the equipment purchase were drafted by Black & Veatch.

Discussion

The specifications for the Burdick Unit #2 Generator Breaker Addition were advertised and issued for bid in accordance with the City Purchasing Code. Bids were publicly opened on March 16, 2010. Specifications were sent to four potential bidders and responses were received as listed below. The engineer’s estimate for this project was \$98,000.00.

Bidder	Bid Price
Eaton Corporation	\$ 86,670.00
Harold K. Scholz Co.	\$ 106,465.00
Siemens Energy	\$ 156,231.00

The bids were reviewed by the consulting engineer for this project, Black and Veatch, and by plant engineering staff. Eaton proposed the following technical exceptions to the specifications. Their standard indoor breaker is rated for 95 kV BIL (Basic Input Level) instead of the specified 110 kV BIL rating. They also proposed a current transformer with a capacity class of C400 instead of the specified C800. Scholz proposed a current transformer with a capacity rating of C200. This rating is related to the number of

external locations to which the output signal must be delivered. In the designed use, on a single connection, the lower capacity class is sufficient. The exceptions proposed by both vendors were evaluated as not compromising equipment performance in the proposed application and are acceptable. The bid from Eaton is recommended by Black and Veatch and utility engineering staff. It is compliant with specifications and less than the engineer's estimate.

Alternatives

It appears that the Council has the following alternatives concerning the issue at hand. The Council may:

1. Move to approve
2. Refer the issue to a Committee
3. Postpone the issue to future date
4. Take no action on the issue

Recommendation

City Administration recommends that the Council award the Contract for Burdick Unit #2 Generator Breaker Addition to Eaton Corporation of Moon Township, Pennsylvania, as the low responsive bidder, with the bid price of \$86,670.00.

Sample Motion

Move to approve the bid award of \$86,670.00 from Eaton Corporation for the Burdick Unit #2 Generator Breaker Addition as submitted.

Substation H Normal Configuration

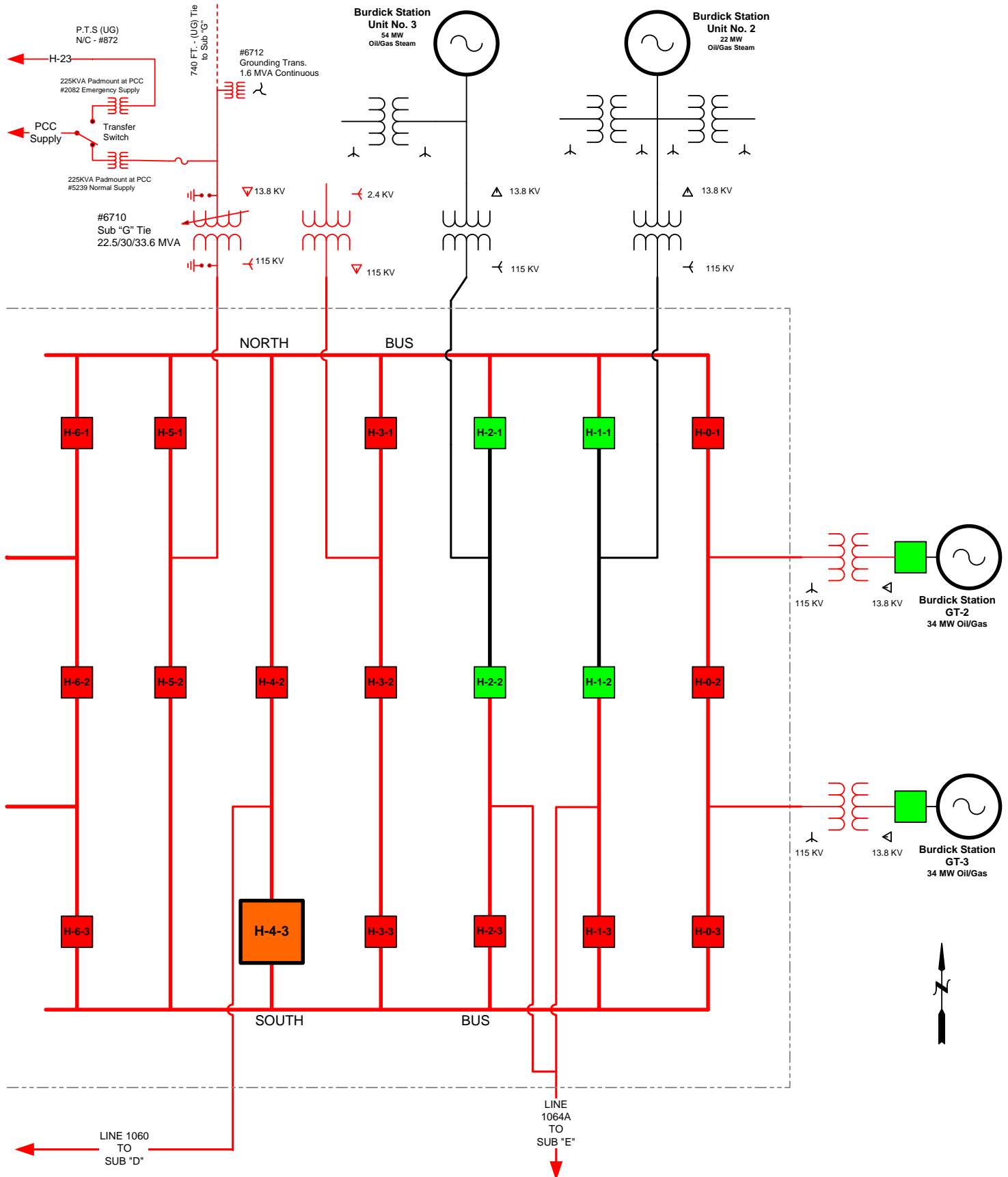


FIGURE #1

H-4-3 Breaker Failure Scheme Before Burdick Modification

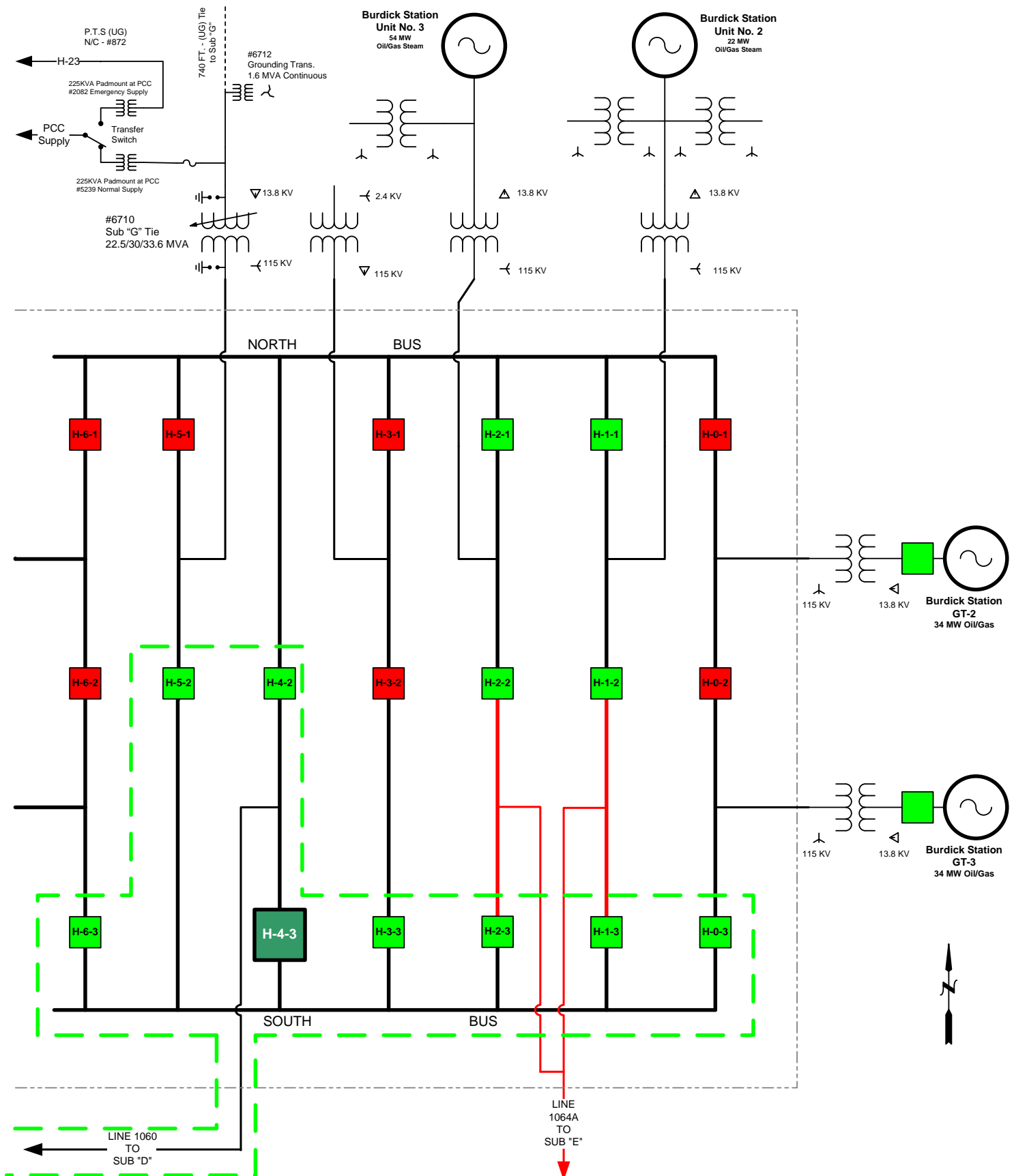


FIGURE #2

H-4-3 Breaker Failure Scheme After Burdick Modification

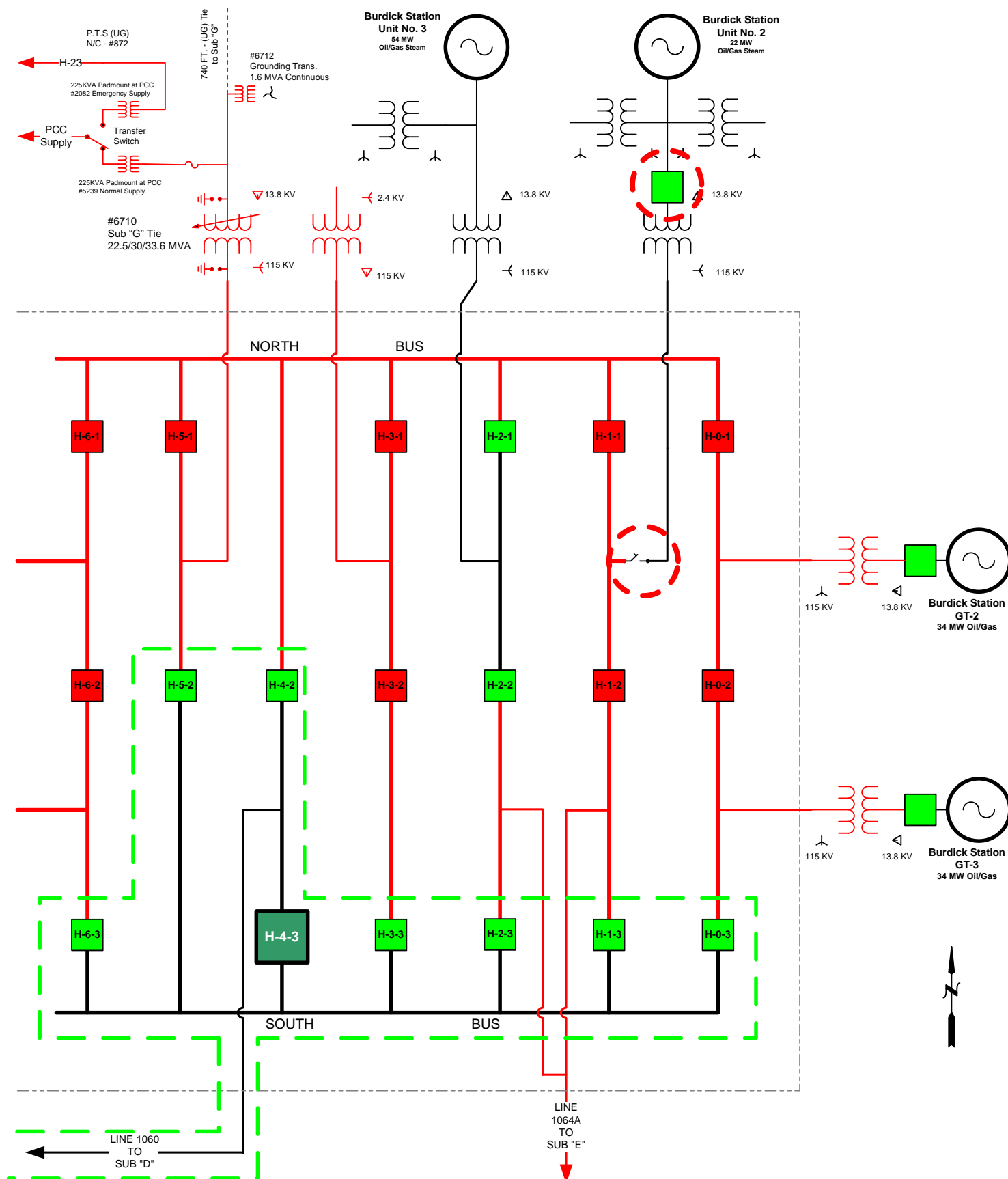


FIGURE #3

Purchasing Division of Legal Department
INTEROFFICE MEMORANDUM



Dale Shotkoski, Purchasing Agent

*Working Together for a
Better Tomorrow, Today*

BID OPENING

BID OPENING DATE: March 16, 2010 at 2:00 p.m.
FOR: Burdick Unit #2 Generator Breaker Addition
DEPARTMENT: Utilities
ESTIMATE: \$98,000.00
FUND/ACCOUNT: 520
PUBLICATION DATE: February 13, 2010
NO. POTENTIAL BIDDERS: 4

SUMMARY

Bidder:	<u>Siemens Energy, Inc.</u> Wendell, NC	<u>Harold K. Scholz Company</u> Ralston, NE
Bid Security:	Federal Insurance Company	Fidelity & Deposit Co.
Exceptions:	None	Noted

Bid Price:		
Material:	\$146,011.00	\$99,500.00
Sales Tax:	\$ 10,221.00	\$ 6,965.00
Total Base Bid:	\$156,231.00	\$106,465.00

Bidder:	<u>Eaton Corporation</u> Moon Township, PA
Bid Security:	Travelers Casualty & Surety
Exceptions:	Noted

Bid Price:	
Material:	\$81,000.00
Sales Tax:	\$ 5,670.00
Total Base Bid:	\$86,670.00

cc: Gary Mader, Utilities Director
Dale Shotkoski, City Attorney
Jeff Pederson, City Administrator

Bob Smith, Assist. Utilities Director
Pat Gericke, Utilities Admin. Assist.
Lynn Mayhew, Utility Engineer

RESOLUTION 2010-120

WHEREAS, the Utilities Department engineering staff routinely reviews relaying and system configurations to ensure maximum redundancy in order to provide uninterrupted service to our customers; and

WHEREAS, a recent review of Substation H revealed a single contingency condition that could result in the failure of the entire substation; and

WHEREAS, the Utilities Department wishes to enhance the reliability of the electric distribution system by adding redundancy to Substation H; and

WHEREAS, on October 13, 2009, Black and Veatch of Kansas City, Missouri was awarded a contract for engineering services to provide a modification of Substation H to add a breaker and required auxiliary equipment for the #2 Generating Unit; and

WHEREAS, the Utilities Department invited sealed bids for Burdick Unit #2 Generator Breaker Addition; and

WHEREAS, on March 16, 2010, bids were received, opened and reviewed; and

WHEREAS, the proposal of Eaton Corporation of Moon Township, Pennsylvania, for the Burdick Unit #2 Generator Breaker Addition was submitted in accordance with the terms and the specifications and all other statutory requirements contained therein at a cost of \$86,670.00.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE CITY OF GRAND ISLAND, NEBRASKA, that the bid of Eaton Corporation of Moon Township, Pennsylvania, is hereby approved.

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Adopted by the City Council of the City of Grand Island, Nebraska, April 27, 2010

Margaret Hornady, Mayor

Attest:

RaNae Edwards, City Clerk

Approved as to Form	☐ _____
April 21, 2010	☐ City Attorney