



# City of Grand Island

Tuesday, October 13, 2009

Council Session

## Item G17

**#2009-255 - Approving Award of Engineering Services Contract  
for Burdick Unit 2 Generator Breaker**

Staff Contact: Gary R. Mader

# Council Agenda Memo

**From:** Gary R. Mader, Utilities Director  
Wesley Nesor, Asst. City Attorney/Purchasing

**Meeting:** October 13, 2009

**Subject:** Burdick Unit 2 Generator Breaker – Engineering Services

**Item #'s:** G-17

**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.

## **Discussion**

The request for proposal for engineering services for the procurement and installation of the generator breaker, and associated auxiliary equipment at Burdick Station was publicly advertised in accordance with the City Purchasing Code. Proposals from the following firms were received:

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### Company

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Black & Veatch, Overland Park, KS  
Sargent & Lundy, Chicago, IL  
Advantage Engineering, Inc., Chesterfield, MO  
Sega, Inc., Stilwell, KS

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Using a matrix of the Department’s established evaluation criteria, which included Company Experience, Personnel Experience, Proposal Responsiveness, Pricing and Commercial Terms, the proposals were reviewed by the department’s division managers. A tabulation of the evaluations factors indicated a consensus for Black & Veatch. That firm’s proposal was ranked either #1 or #2 by each evaluator. A copy of the evaluation tabulation is attached.

## **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 Proposal for the Burdick Unit 2 Generator Breaker-Engineering Services to Black & Veatch of Kansas City, Missouri.

### **Sample Motion**

Move to approve the proposal from Black & Veatch of Kansas City, Missouri, for the Burdick Unit 2 Generator Breaker-Engineering Services as submitted.

**City of Grand Island, Nebraska  
 Utilities Department  
 Generator Breaker Engineering**

<b>Evaluation Category</b>	<b>Advantage Chesterfield, MO</b>	<b>Black &amp; Veatch Kansas City, MO</b>	<b>Sargent &amp; Lundy Chicago, IL</b>	<b>Sega Stilwell, KS</b>
Company Experience (x2)	28	46	44	38
Personnel Experience (x2)	30	46	44	32
Proposal Responsiveness	18	23	20	20
Pricing	26	17	7	23
Commercial Terms	22	19	20	23
<b>Total</b>	<b>124</b>	<b>151</b>	<b>135</b>	<b>136</b>

10 = Excellent  
 5 = Average  
 1 = Poor

<b>Bob:</b>	43 (1)	40 (2)	38 (4)	39 (3)
<b>Travis:</b>	44 (4)	63 (1)	53 (2)	46 (3)
<b>Tim:</b>	37 (4)	48 (2)	44 (3)	53 (1)
	9	5	9	7

# Substation H Normal Configuration

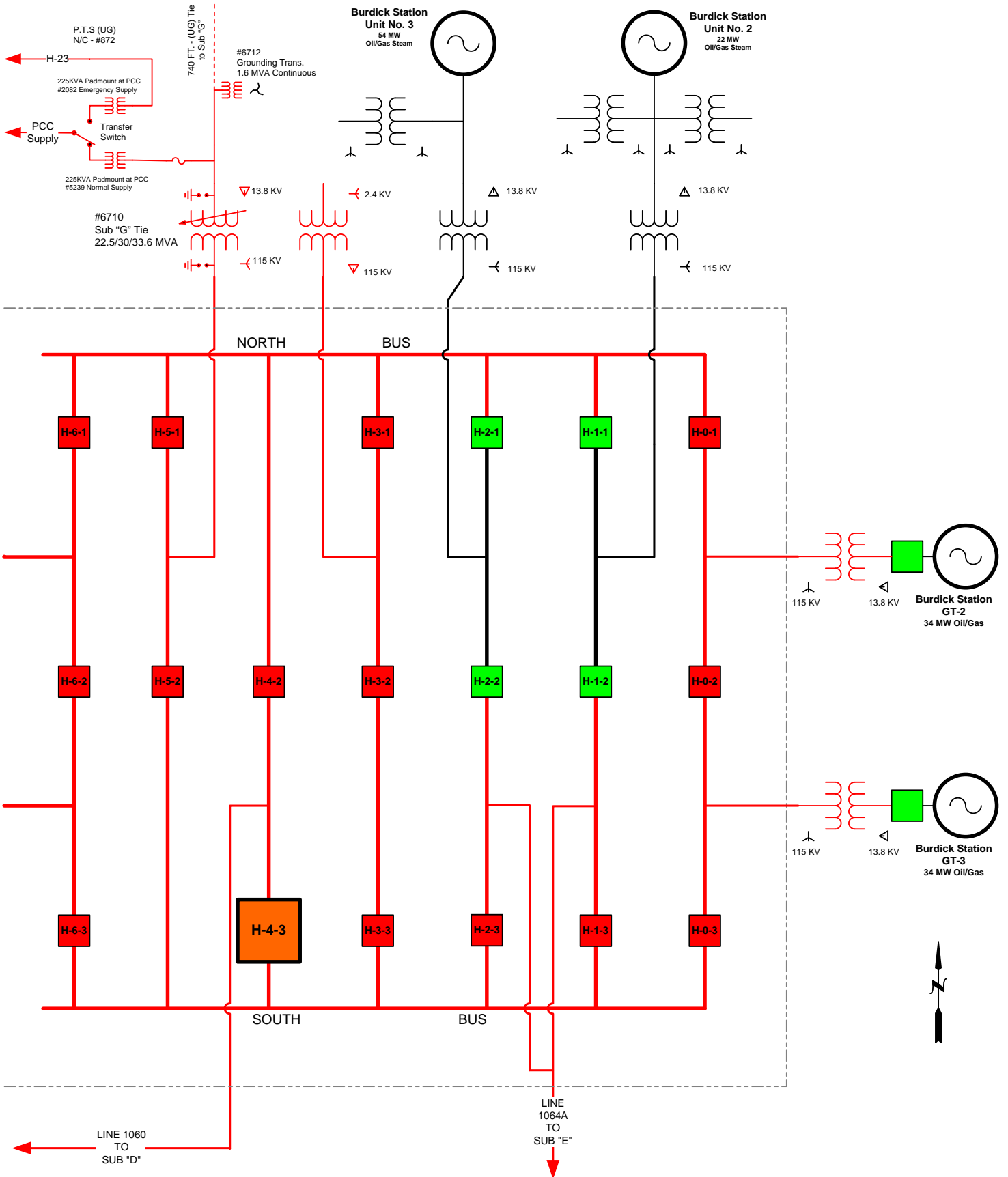


FIGURE #1

# H-4-3 Breaker Failure Scheme Before Burdick Modification

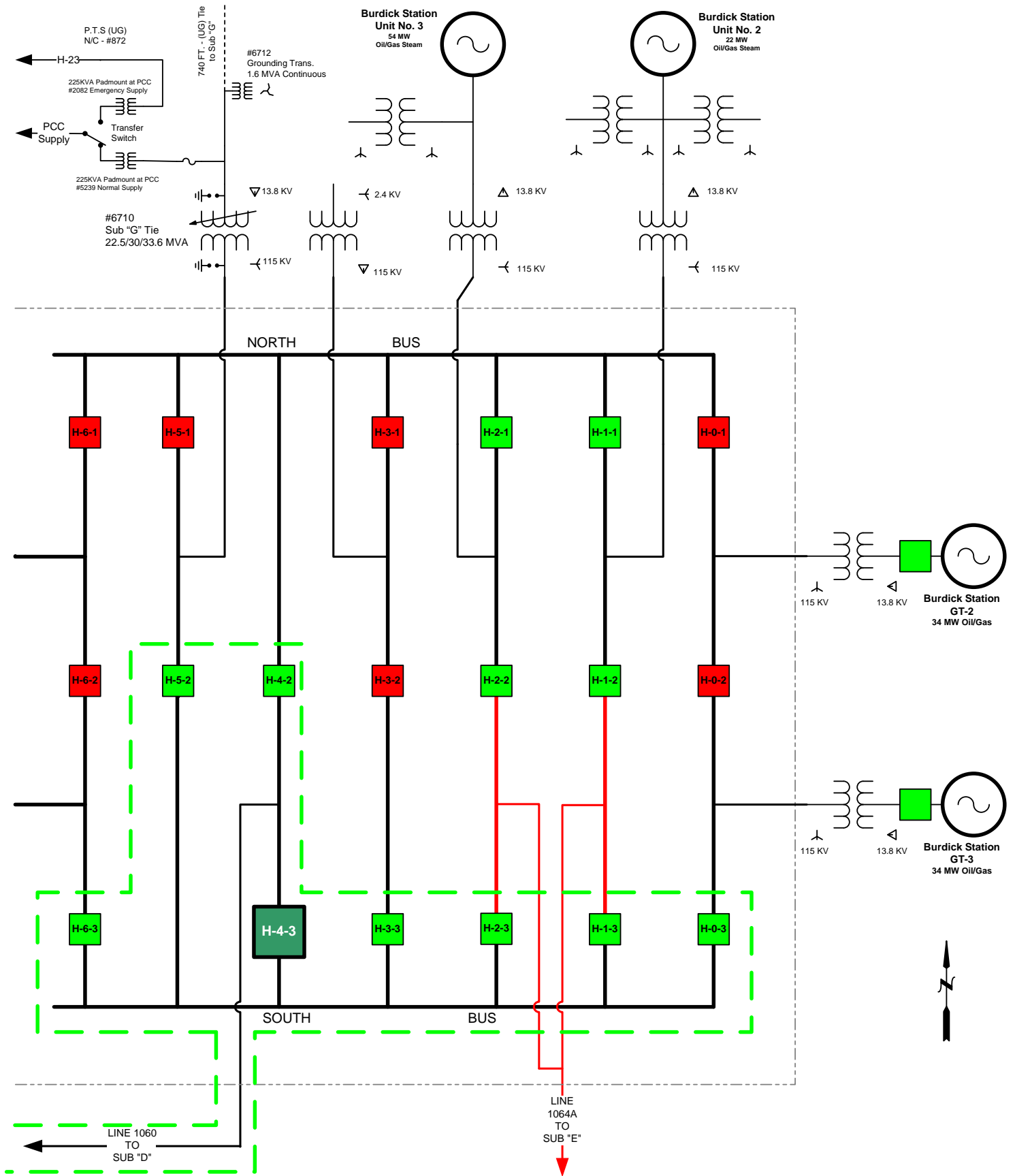


FIGURE #2

# H-4-3 Breaker Failure Scheme After Burdick Modification

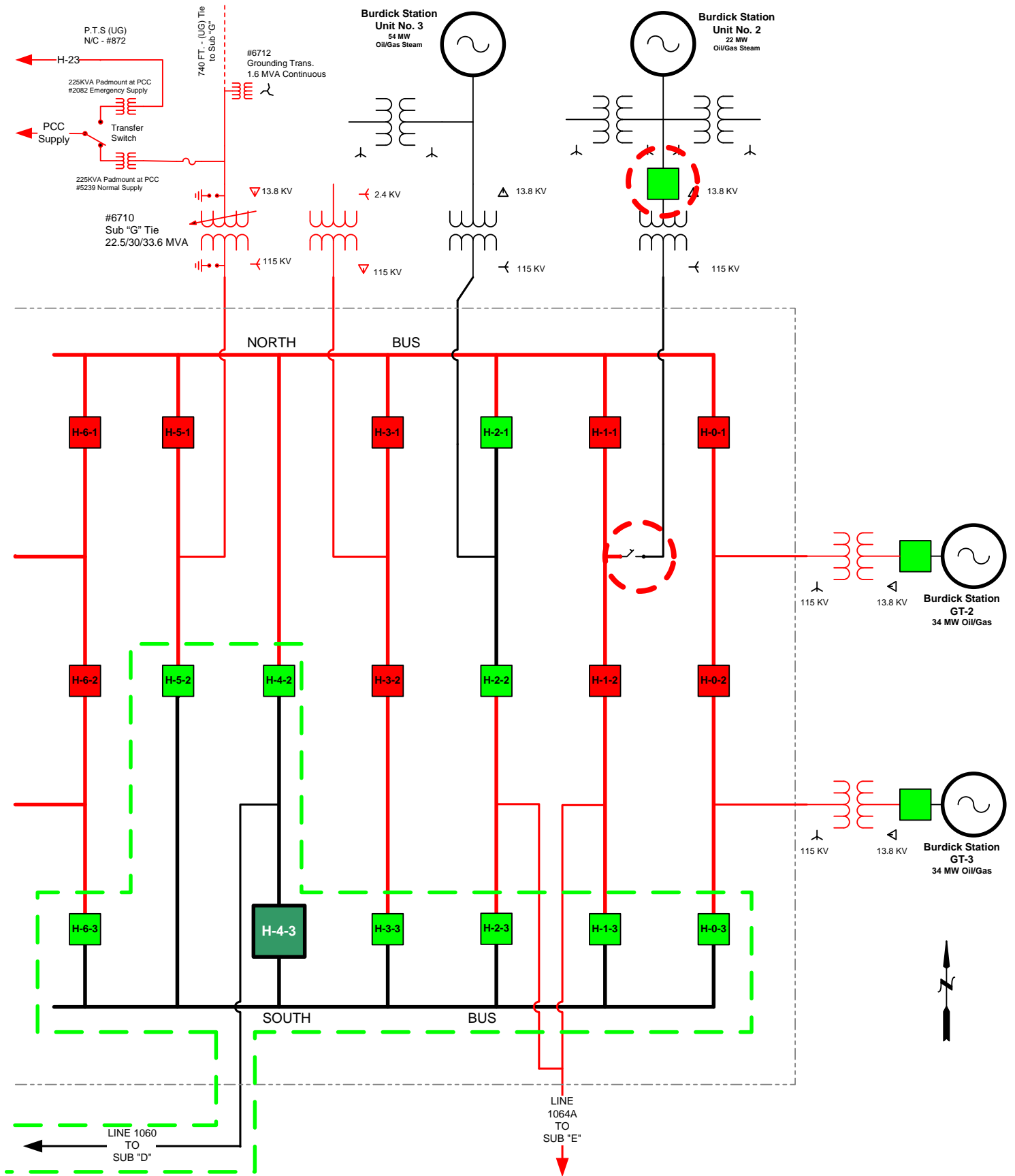


FIGURE #3





Wes Nespor, Purchasing Agent

*Working Together for a  
Better Tomorrow, Today*

**REQUEST FOR PROPOSAL  
FOR  
BURDICK UNIT 2 GENERATOR BREAKER ENGINEERING SERVICES**

**RFP DUE DATE:** September 17, 2009 at 4:00 p.m.  
**DEPARTMENT:** Utilities  
**PUBLICATION DATE:** September 3, 2009  
**NO. POTENTIAL BIDDERS:** 3

**SUMMARY OF PROPOSALS RECEIVED**

**Sega, Inc.**  
Stilwell, KS

**Sargent & Lundy**  
Chicago, IL

**Advantage Engineering**  
Chesterfield, MO

**Black & Veatch**  
Overland Park, KS

cc: Gary Mader, Utilities Director  
Jeff Pederson, City Administrator  
Dale Shotkoski, City Attorney  
Pat Gericke, Utilities Admin. Assist.  
Tim Luchsinger, Assist. Utilities Director

Bob Smith, Assist. Utilities Director  
David Springer, Finance Director  
Wes Nespor, Purchasing Agent  
Karen Nagel, Utilities Secretary

**P1367**

RESOLUTION 2009-255

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 situation 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, the 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; and

WHEREAS, a Request for Proposal for engineering services was publicly advertised in accordance with the City Purchasing Code, and four firms responded to the Request for Proposal; and

WHEREAS, the proposal of Black and Veatch of Kansas City, Missouri for the Burdick Unit #2 Generator Breaker Engineering Services was submitted in accordance with the terms and the specifications and all other statutory requirements contained therein at a not to exceed cost of \$84,600.00.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE CITY OF GRAND ISLAND, NEBRASKA, that the proposal of Black and Veatch of Kansas City, Missouri, is hereby approved.

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Adopted by the City Council of the City of Grand Island, Nebraska, October 13, 2009

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Margaret Hornady, Mayor

Attest:

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RaNae Edwards, City Clerk

Approved as to Form    ☐ \_\_\_\_\_  
October 8, 2009        ☐ City Attorney