

Group Procedure EPS-S-003
Revision 00

Switching the Incoming AC feed of 52G—using the 2.4MW Transformer located in the Old RF Transformer Yard in Place of the MG Sets

- 1) The 2.4MW 13.8KV knife switch must be off (opened) and the Kirklock Key RE10392H Key removed from the lock on the 13.8KV switch located behind Bldg. 928 in the Old RF Transformer Yard. Verify the three knife blades of this 13.8KV switch are in the open position (down position). Then take this key into Bldg. 928 basement and insert it into the 7 Key tree located on the side of L4 cubicle. (Note: All top 3 keys must be in this lock in order for the tree to release the 4 keys necessary to open cubicles L1, L2, L3, L4. The 3 top keys are the 3 possible feeds which could be powering the 52G circuit breaker ---the three sources of power are:
 - a) Siemens MG set.
 - b) 2.4MW Transformer
 - c) Westinghouse MG Set)
- 2) The secondary output of the 2.4MW Transformer goes to the line side of the automatic circuit recloser. The load side of the automatic circuit recloser has 3 red 16000V 500 MCM cables going into the Siemens Basement to the L4 cubicle. Connect these 3 cable which are labeled A, B, and C to the bus which is also labeled A, B, C.
- 3) Remove the 12 flexible links located in the cage area above the L4 cubicle which are the three phase output of the Siemens Generator. Lay all hardware and flexible links inside the L4 cubicle so nothing is misplaced.
- 4) Also make sure the Westinghouse bus links are not in place which are located right over the L3 Cubicle if they are attached they must be unbolted from the input of 52G. (Note: There is to be only one input AC feed attached to the input of 52G at any time)
- 5) Since the Siemens MG set will not be used, it will be necessary not to use many of the interlocks associated with the running of the MG Set. Rotate the transfer switch located in RK 52 to the “Transformer” position. Note : This is a push-to-turn switch. This switch will energize relays that will disable those interlocks not needed to run with the transformer.
- 6) This switch also tells the PLC what mode or running we are in and makes the appropriate PLC changes.

Main Magnet Power Supply Operating Procedure When using the 2.4 MW Transformer Instead of the MG-Set

Turn “ON” Procedure

- 1) Verify that the 2.4 MW transformer cables are the only AC feed attached to 52G Siemens Circuit Breaker.
- 2) Verify the rectifier bus work is set up for the “Westinghouse Mode” when running either Westinghouse or the 2.4MW Transformer. (Rectifier MD 2 & 3 “P” Bank PS are bused out and the firing pulses are disconnected in those two PS and the fuses pull to Ref. Transformers inside the MD’s 2 & 3) (“Westinghouse Mode” buswork changes as per attached picture)
- 3) Unlock the 13.8 KV 3 Phase knife switch using key RE10392H from the 7 key Kirklock Key tree located on the side of L4 cubicle in Bldg. 928 Basement.
- 4) Close the 13.8 KV 3 Phase knife switch (**Note: CAT-4)(40 CAL /CM2 GEAR)** this will energize the 2.4 MW Transformer primary. The secondary of the transformer is going to the automatic circuit recloser gear. This circuit recloser is controlled from inside Siemens new Control Room in RK 5073.
- 5) Close new 95S switches which attach the MMPS to the ring magnets using OPM 2.6.6.a Checklist.
- 6) Check that all Kirlock Keys are in the key exchange in the old Control Room LE1 Console and the E G1 key is turned and all keys are held captive in key tree.
- 7) In RK 52 located in the old Control Room verify the interlock transfer switch is in the transformer position, if not, this is a push to turn switch and must be put in the transformer position.
- 8) Confirm that all personnel are accounted for and are clear of equipment.
- 9) In RK 5073 locate 2.4MW Control Panel and turn the rotary switch to **ENABLE**. After panel is enabled press the “**ON**” push button (this will close the automatic circuit recloser outside in the old RF Transformer Yard which brings the output of the 2.4MW Transformer to the primary of 52G Siemens in the basement of 928 RK L4)
- 10) In RK 5074 (New Control Room) make sure the local/remote switch is in local and 52G control switch is in local.

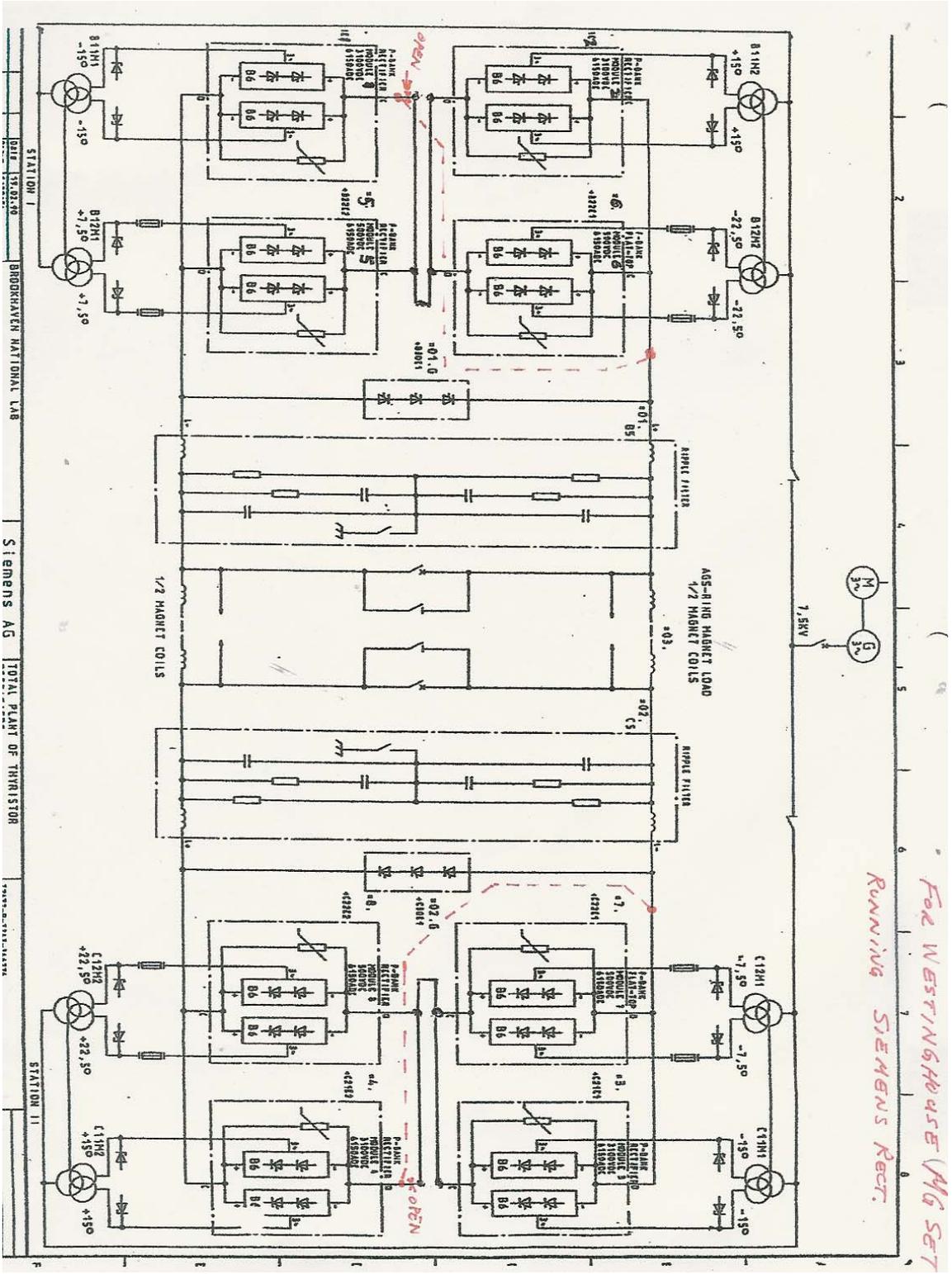
- 11) Press the **ST-BY** Push Button in RK 5074, this will:
 - a) Close the 89 Switches for STA I & II.
 - b) Turn on the AUX. For the Siemens Transformers outside in Siemens Transformer Yard
 - c) Close the ground switch for STA. I
 - d) If all interlocks are clear, then it will open the fast & slow 95 switches for STA I & II.

Then reset the “Lockout Relay” If it was tripped.
- 12) The stand-by light should go “ON” after approximately 5 seconds and the fault light should clear. If the fault light does not clear check the control view panel in RK 5074 for any faults. (Note it may be necessary to press the ST-BY P.B. If any INT’LK has cleared since the last time the ST-BY P.B. was pressed.)
- 13) Go into the old Control Room and clear all lights and annunciate flags by pressing the reset in each of the racks and looking at the OV-Load Relays making sure none of the annunciate flags are down.
- 14) When all the faults are cleared make sure on the Control View Panel on the AGS MMPS screen that the following conditions are true:
 - a) 89 Switch STA I & II are closed.
 - b) The Fast and Slow 95Ia & Ib , 95IIa & IIb are open.
 - c) The 95S I & II Switches should show AGS MMPS attached to the ring magnets.
 - d) STA I Ground Switch should be closed and STA II Ground should be open.
- 15) Load the computer function which will be used for the run, from the Sun Terminal in RK 5082. First **Load Buffers** if any warning signals appear on the Sun Terminal identifying differences between function loaded in buffers and calculated values reload until no differences are found then “**Make Live**” (**Execute**) **Repeat Cycle**. (Note: When using the 2.4MW Transformer, if only the “F” Bank power supplies will be used and the I error correction will be used it will be necessary to setup the I error correction pre-det as per the I Error correction Setup Procedure.)
- 16) In RK 5084 compare the reference voltages for MD 5&6 and MD 7&8 (If only the two “F” Bank power supplies are being used) and the one current reference with the reference on the Sun Terminal. (Note: There should be **NO** Vref on MD 1&2 and MD 3&4 if only the “F” Bank PS are used since they are “P” Bank power supplies but if all PS are used check all ref. Voltages for proper waveshapes). The references can be checked on the Sun Terminal by going to the **Function Menu**, then **EDIT**, then V1_(t) is the reference for MD 5&6, V2(t) is the reference for MD 7&8, and A I_(t) is the current reference etc.)

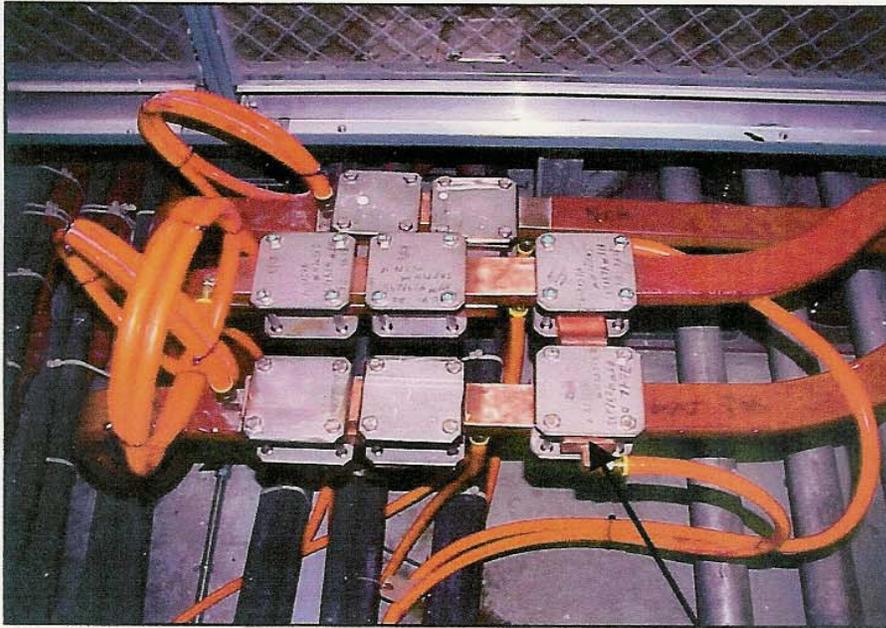
- 17) If references look good, leave the four channels of the scope hooked up to MD 5&6 Ref, MD 7&8 Ref, MD 5&6 V out, & MD 7&8 V out. (Note: Do a single cycle first using the computer which will set the Ref voltages to dwell, Then go to RK 5074 and press the “**ON**” P.B to turn on the rectifiers.
- 18) Single cycle again and make sure we are not over powering the transformer by monitoring the AMP meter in RK 5073. The max current out of the secondary of transformer is 540 AMPS and the meter we are using you must multiply what you see by 1.5. This will then tell you what current is being drawn out of the sec. of the transformer. If power is OK then select repeat cycle.
- 19) In RK 5084 verify and compare the V refs and V outs and the I ref and I out look the same. If signals look corrupted, hit stop trigger on scope, then turn “**OFF**” the rectifiers by pressing “**ST-BY**” P.B. in RK 5074. and call in system specialist for assistance.
- 20) If corrupted signals were captured on the scope screen dump it to the plotter by:
 - a) Put paper in plotter (up against the left side and up to white line)
 - b) Then hit the second white button (Symbol of paper roller) this will set paper.
 - c) Hit on scope “**SCREEN DUMP**” this will dump screen to plotter.

Turn “OFF” Procedure

- 1) Press “ST-BY” PB in RK 5074, rectifier control panel;
- 2) Press “OFF” PB in RK 5073, 2.4 MW Transformer Automatic Circuit Recloser.
- 3) Follow normal LOTO OF AGS MMPS for ring entry procedure (Step #6 NA)



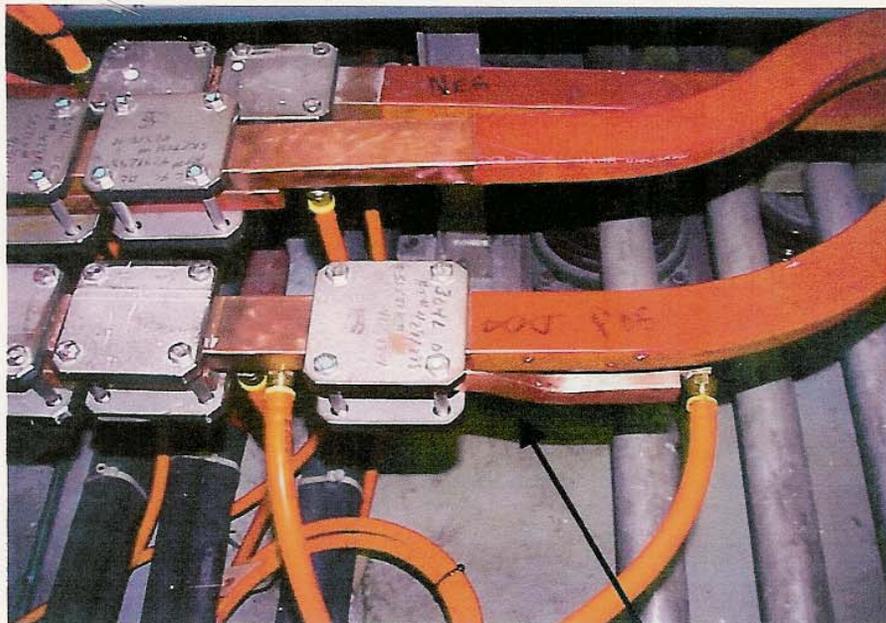
RECTIFIER BUSS LINK POSITION LOCATION 1



Buss link jumper is installed as shown.

Bolt torque specification 236 in lbs.

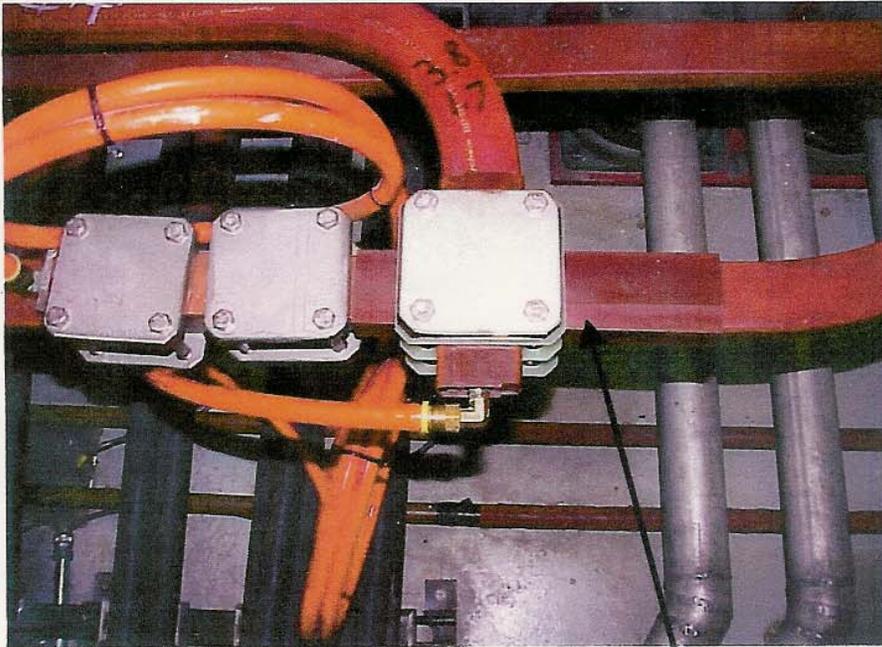
BUSS LINK INSTALLED FOR SIEMENS OPERATION



Buss link jumper is installed on the underside of the positive buss and held in position by buss clamp. **NO ELECTRICAL CONNECTION.**

BUSS LINK INSTALLED FOR WESTINGHOUSE OPERATION

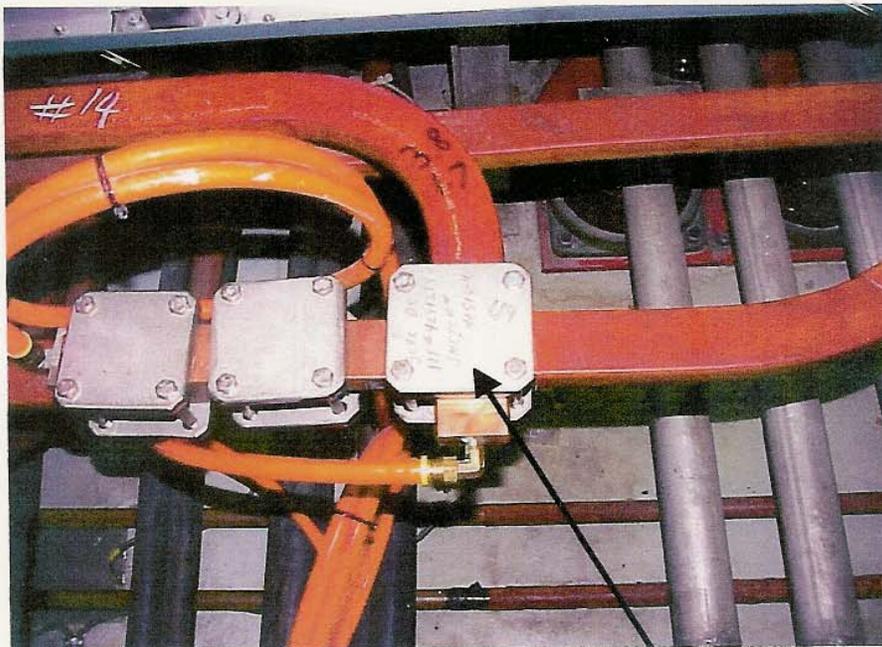
RECTIFIER BUSS LINK POSTIONS LOCATION 2



Bus link jumper is installed as shown. **NO ELECTRICAL CONNECTION.**

Bolt torque specification 236 in lbs.

BUSS LINK INSTALLED FOR SIEMENS OPERATION

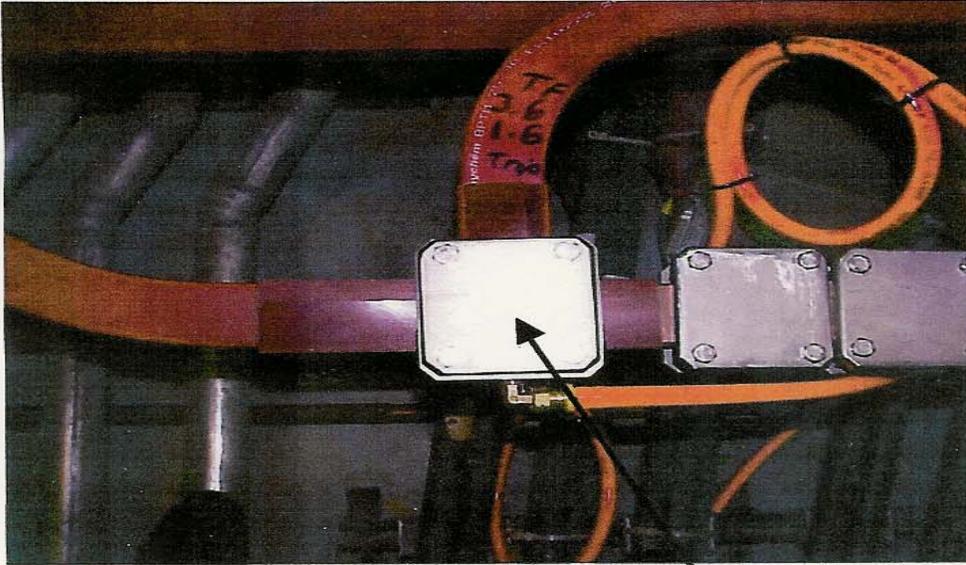


Bus link jumper is installed as shown.

Bolt torque specification 236 in lbs.

BUSS LINK INSTALLED FOR WESTINGHOUSE OPERATION

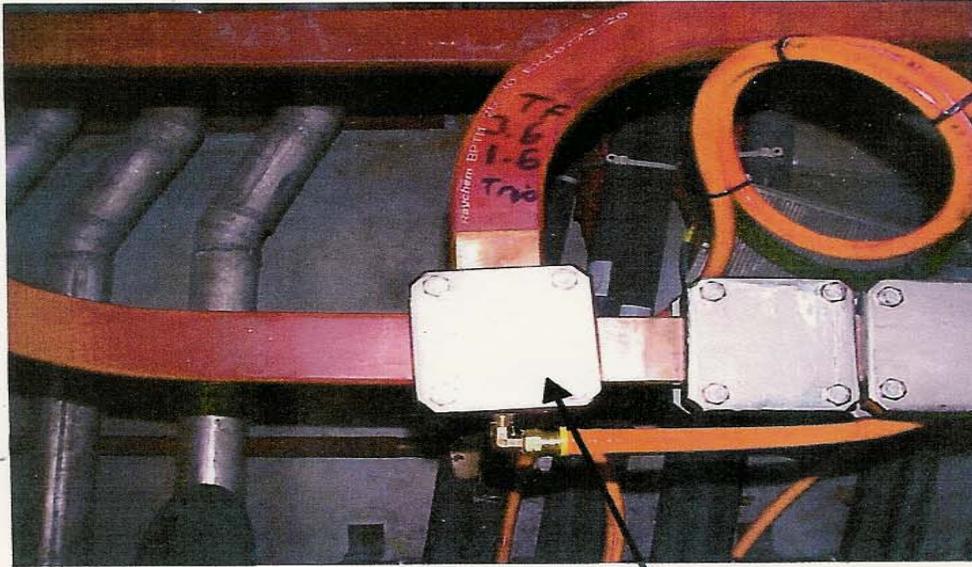
RECTIFIER BUSS LINK POSTIONS LOCATION 3



Buss link jumper is installed as shown. There is **NO ELECTRICAL CONNECTION.**

Bolt torque specification 236

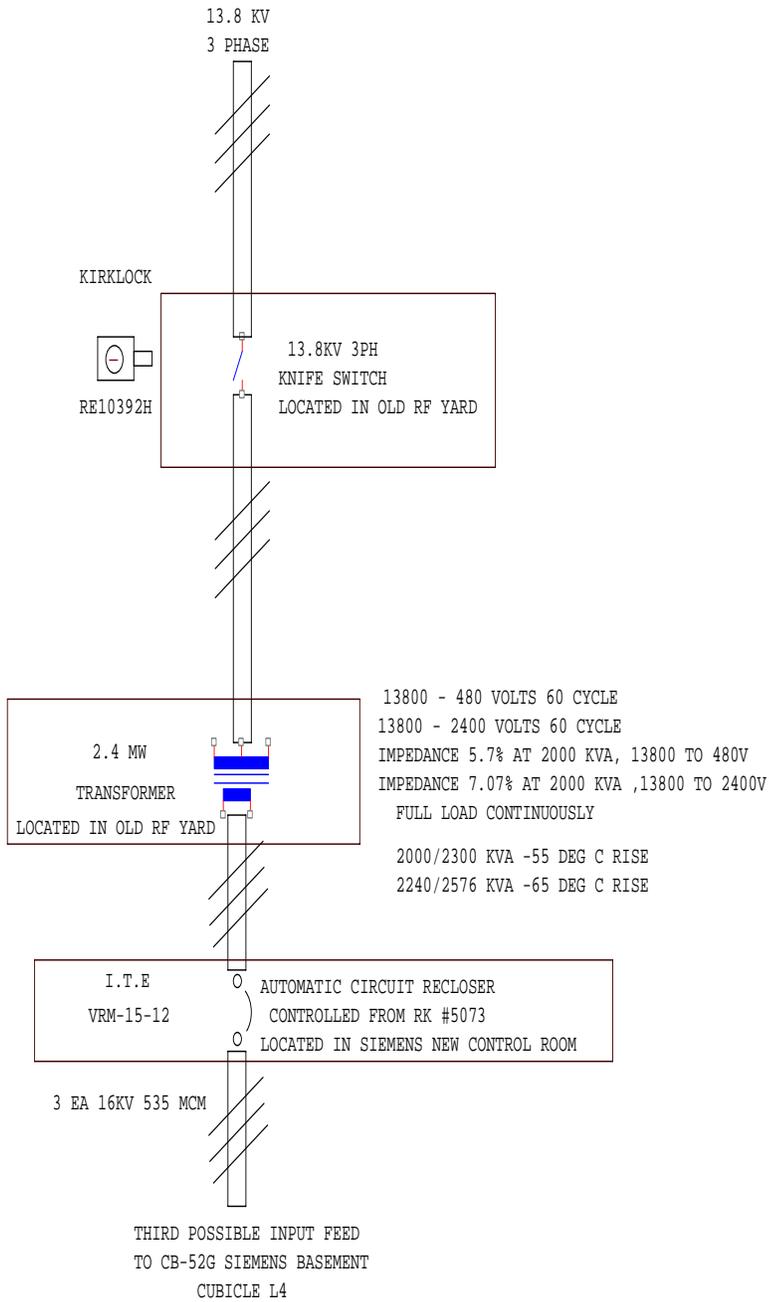
BUSS LINK INSTALLED FOR SIEMENS OPERATION



Buss link jumper is installed

Bolt torque specification 236 in lbs.

BUSS LINK INSTALLED FOR WESTINGHOUSE OPERATION



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2.4 MW TRANSFORMER ONE-LINE		
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