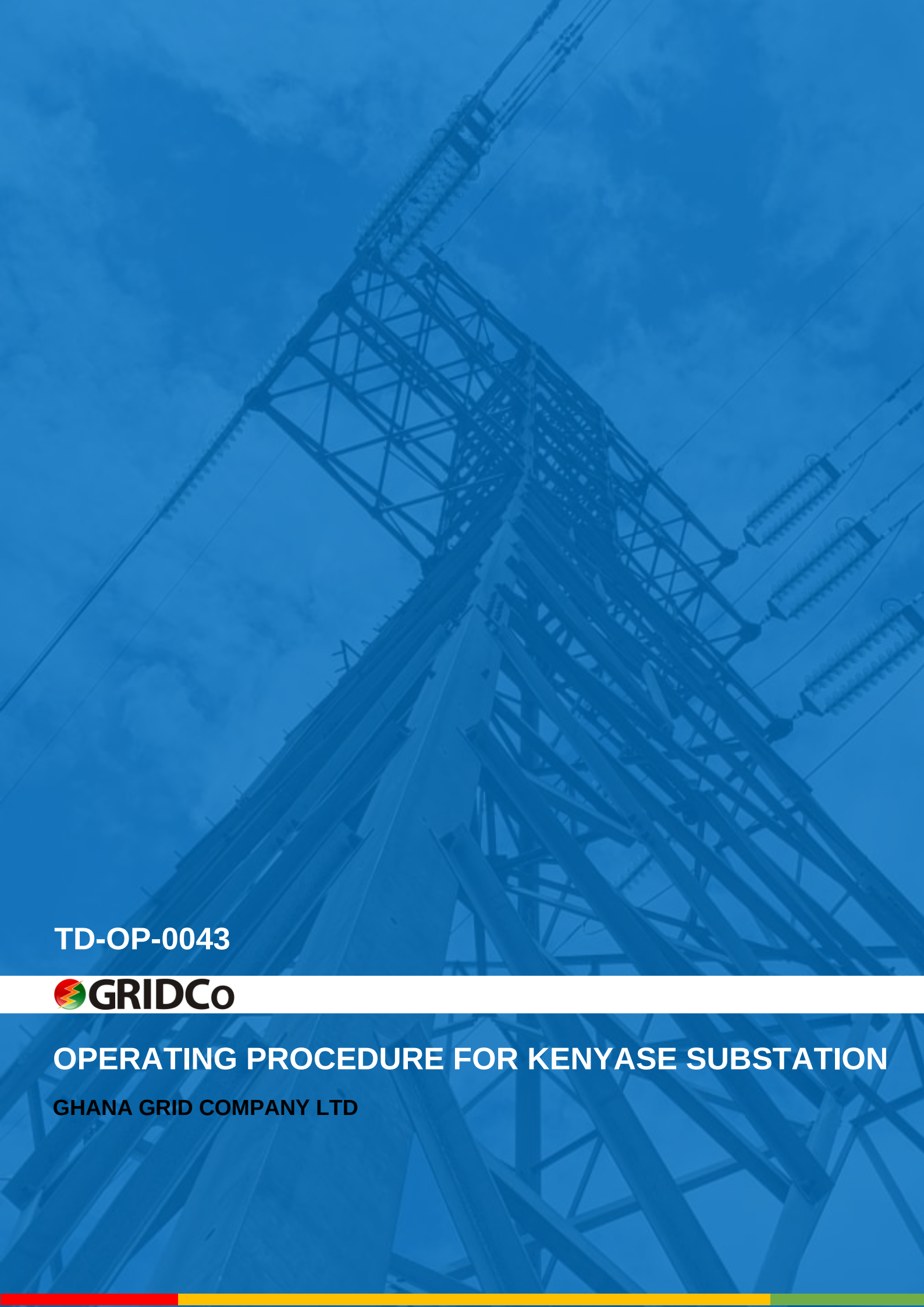

TD-OP-0043

GRIDCo

OPERATING PROCEDURE FOR KENYASE SUBSTATION

GHANA GRID COMPANY LTD

Title:	**OPERATING PROCEDURE FOR KENYASI SUBSTATION (KY43)**		
Issued To:	Director, System Operations Director, NNS Manager, SCC Manager, Dispatch Operations Area Manager, Techiman Operating Staff, Techiman Area Maintenance Staff, Techiman Area Dispatch Staff, SCC	**Number:**	TD-OP-0043
		Subject Area:	Operating
		Issue Date:	Trial
		Origin:	Technical Services
Key Words:	Take Out, Isolate, Prepare, Energize, Restore, Automatic Outage		

CONTENTS

1. Purpose

This directive specifies the operations to be carried out to take out of service, isolate or restore equipment at KY43 Substation to service for planned and auto outages.

2. Scope

The directive will be used by Operators at Techiman Operating Area and System Control Center (SCC) for operation of equipment at KY43 Substation.

3. Procedure

3.1. To take B2KY line out of service

SCC shall carry out (or advise the KY43 Operator to carry out) the following:

- Verify opened 43L2-D transfer disconnect switch
- Open 43L2A breaker.

SCC shall carry out (or advise the B12 Operator to carry out) the following:

- Verify opened 12B2KY-S bypass disconnect switch
- Open 12B2KY breaker
- Check for no potential on B2KY line

3.2. To take out, isolate and de-energize B2KY line for work

- KY43 Operator shall request for Station Guarantee from B12

SCC shall carry out (or advise the B12 Operator to carry out) the following:

- Checked opened 12B2KY-S bypass disconnect switch and turn off its 125Vdc supply
- Open 12B2KY breaker

SCC shall carry out (or advise the KY43 Operator to carry out) the following:

- Checked opened 43L2-D transfer disconnect switch and turn off its 125Vdc supply
- Open 43L2A breaker
- Check for no potential on B2KY line

SCC shall advise B12 Operator to carry out the following:

- Open 12B2KY-L2 disconnect switch and turn off its 125Vdc supply
- Close 12B2KY-G ground disconnect switch

SCC shall advise KY43 operator to carry out the following:

- Open 43L2A-L2 disconnect switch and turn off its 125Vdc supply
- Close 43B2KY-G ground disconnect switch

3.3. To restore B2KY line to service after work

3.3.1. Prepare B2KY line for restoration:

KY43 Operator shall:

- Advise SCC when work on the line has been completed and permit(s) surrendered (including all Station Guarantees)
- Check for no potential on B2KY line

SCC shall advise B12 Operator to carry out the following:

- Check opened 12B2KY breaker
- Check opened 12B2KY-S bypass disconnect switch and turn off its 125Vdc supply
- Open 12B2KY-G ground disconnect switch
- Turn on 125Vdc supply and close 12B2KY-L2 disconnect switch

SCC shall advise KY43 Operator to carry out the following:

- Check opened 43L2A breakers
- Check opened 43L2-D transfer disconnect switch and turn on its 125Vdc supply
- Open 43B2KY-G ground disconnect switch
- Turn on 125Vdc supply and close 43L2A-L2 disconnect switch

3.3.2. Restoration of B2KY line to service:

SCC shall:

- Advise the B12 and KY43 Operators of readiness to restore B2KY line to service

- Close (or advise the B12 Operator to close) 12B2KY breaker
- Close (or advise the KY43 Operator to close) 43L2A breaker

3.4. To restore B2KY line to service after automatic outage

If B2KY line trips auto due to fault:

KY43 Operator shall:

- Advise SCC about the outage
- Acknowledge all alarms and record relay operation details
- Reset relay targets
- Report relay operation details to SCC

SCC shall:

- Energize (or advise the B12 Operator to energize) the line **ONCE** by closing 12B2KY breaker
- Close (or advise the KY43 Operator to close) 43L4A breaker

KY43 Operator shall:

- Advise the Supervisor/Area Manager of operation above
- Advise maintenance men to patrol the line if the operation above is not successful

3.5. To take K4KY line out of service

SCC shall carry out (or advise the KY43 Operator to carry out) the following:

- Verify opened 43L4-D transfer disconnect switch
- Open 43L4A breaker

SCC shall carry out (or advise the K13 Operator to carry out) the following:

- Open 13DL4 and 13L3L4 breakers
- Check for no potential on K4KY line

3.6. To take out, isolate and de-energize K4KY line for work

- KY43 Operator request for Station Guarantee from K13

SCC shall carry out (or advise the KY43 Operator to carry out) the following:

- Check opened 43L3-D transfer disconnect switch and turn off its 125Vdc supply

- Open 43L4A breaker

SCC shall carry out (or advise K13 Operator to carry out) the following:

- Open 13DL4 and 13L3L4 breakers

- Check for no potential on K4KY line

SCC shall advise K13 Operator to carry out the following:

- Open 13DL4-L4 and 13L3L4-L4 disconnect switches and turn off its 125Vdc supply

- Close 13K4KY-G ground disconnect switch

SCC shall advise KY43 Operator to carry out the following:

- Open 43L4A-L4 disconnect switch and turn off its 125Vdc supply

- Close 43K4KY-G ground disconnect switch

3.7. To restore K4KY line to service after work

3.7.1. Prepare K4KY line for restoration:

KY43 Operator shall:

- Advise SCC when work on the line has been completed and permit(s) surrendered (including all Station Guarantees)

- Check for no potential on K4KY line

SCC shall advise K13 Operator to carry out the following:

- Check opened 13DL4 and 13L3L4 breakers

- Open 13K4KY-G ground disconnect switch

- Turn on 125Vdc supply and close 13DL4-L4 and 13L3L4-L4 disconnect switches

SCC shall advise KY43 Operator to carry out the following:

- Check opened 43L4A breaker

- Check opened 43L4-D transfer disconnect switch and turn on its 125Vdc supply

- Open 43K4KY-G ground disconnect switch

- Turn on 125Vdc supply and close 43L4A-L4 disconnect switch

3.7.2. Restoration of K4KY line to service:

SCC shall:

- Advise the K13 and KY43 Operators of readiness to restore K4KY line to service

- Close (or advise the K13 Operator to close) 13DL4 and 13L3L4 breakers

- Close (or advise the KY43 Operator to close) 43L4A breaker

3.8. To restore K4KY line to service after automatic outage

If K4KY line trips auto due to fault:

KY43 Operator shall:

- Advise SCC about the outage

- Acknowledge all alarms and record relay operation details

- Reset relay targets

- Report relay operation details to SCC

SCC shall:

- Energize (or advise the K13 Operator to energize) the line **ONCE** by closing 13DL4 and 13L3L4 breakers

- Close (or advise the KY43 Operator to close) 43L4A breaker

KY43 Operator shall:

- Advise the Supervisor/Area Manager of operation above

- Advise maintenance men to patrol the line if the operation above is not successful

3.9. To take KY6SN line out of service

SCC shall carry out (or advise the SN27 Operator to carry out) the following:

- Verify opened 27L6-D transfer disconnect switch
- Open 27L6A breaker

SCC shall carry out (or advise the KY43 Operator to carry out) the following:

- Verify opened 43L6-D transfer disconnect switch
- Open 43L6A breaker
- Check for no potential on KY6SN line

3.10. To take out, isolate and de-energize KY6SN line for work

- KY43 Operator request for Station Guarantee from SN27

SCC shall carry out (or advise the KY43 Operator to carry out) the following:

- Check opened 43L6-D transfer disconnect switch and turn off its 125Vdc supply
- Open 43L6A breaker

SCC shall carry out (or advise SN27 Operator to carry out) the following:

- Check opened 27L6-D transfer disconnect switch and turn off its 125Vdc supply
- Open 27L6A breaker
- Check for no potential on KY6SN line

SCC shall advise SN27 Operator to carry out the following:

- Open 27L6A-L6 disconnect switch and turn off its 125Vdc supply
- Close 27KY6SN-G ground disconnect switch

SCC shall advise KY43 Operator to carry out the following:

- Open 43L6A-L6 disconnect switch and turn off its 125Vdc supply
- Close 43KY6SN-G ground disconnect switch

3.11. To restore KY6SN line to service after work

3.11.1. Prepare KY6SN line for restoration:

KY43 Operator shall:

- Advise SCC when work on the line has been completed and permit(s) surrendered (including all Station Guarantees)

- Check for no potential on KY6SN line

SCC shall advise SN27 Operator to carry out the following:

- Check opened 27L6A breaker

- Check opened 27L6-D transfer disconnect switch and turn on its 125Vdc supply

- Open 27KY6SN-G ground disconnect switch

- Turn on 125Vdc supply and close 27L6A-L6 disconnect switch

SCC shall advise KY43 Operator to carry out the following:

- Check opened 43L6A breaker

- Check opened 43L6-D transfer disconnect switch and turn on its 125Vdc supply

- Open 43KY6SN-G ground disconnect switch

- Turn on 125Vdc supply and close 43L6A-L6 disconnect switch

3.11.2. Restoration of KY6SN line to service:

SCC shall:

- Advise the SN27 and KY43 Operators of readiness to restore KY6SN line to service

- Close (or advise the SN27 Operator to close) 27L6A breaker

- Close (or advise the KY43 Operator to close) 43L6A breaker

3.12. To restore KY6SN line to service after automatic outage

If KY6SN line trips auto due to fault:

KY43 Operator shall:

- Advise SCC about the outage

- Acknowledge all alarms and record relay operation details

- Reset relay targets

- Report relay operation details to SCC

SCC shall:

- Energize (or advise the SN27 Operator to energize) the line **ONCE** by closing 27L6A breaker

- Close (or advise the KY43 Operator to close) 43L6A breaker

KY43 Operator shall:

- Advise the Supervisor/Area Manager of operation above

- Advise maintenance men to patrol the line if the operation above is not successful

3.13. To isolate 43T1 Transformer for work

SCC shall advise KY43 Operator to carry out the following:

- Inform Customer about readiness to take off 43T1 bank

- Request Customer on 43T1 Bank to take off their load

- If the station service is on 43T1 transfer supply to 43T2 by switching from AC1 to AC2

- Open AC1 Contactor/MCB to take off supply to 43T1 transformer auxiliaries

SCC shall carry out (or advise KY43 Operator to carry out) the following:

- Check opened 43D-T1 transfer disconnect switch and turn off its 125Vdc supply

- Open 43T1F1 breaker

- Open 43AT1 breaker

- Check for no potential on 43T1 Bank

SCC shall advise KY43 Operator to carry out the following:

- Open 43T1F1-F1 disconnect switch

- Open 43AT1-T1 disconnect switch and turn off its 125Vdc supply

- Open AC control MCB to 43T1 auxiliaries

- Open 125Vdc MCB to 43T1 primary and secondary protection and tag with PC13

3.14. To restore 43T1 Bank to service after work

3.14.1. Prepare 43T1 bank for restoration:

KY43 Operator shall:

- Advise SCC when work on the transformer has been completed and permit(s) surrendered (including all Station Guarantees)
- Check for no potential on 43T1 Bank and temporary grounds removed
- Check opened 43D-T1 transfer disconnect switch and turn on its 125Vdc supply
- Close 43T1F1-F1 disconnect switch
- Turn on 125Vdc supply and close 43AT1-T1 disconnect switch
- Close AC control MCB to 43T1 auxiliaries
- Close 125Vdc MCB to 43T1 primary and secondary protection and remove PC13 tag
- Advise SCC and Customer(s) of readiness to restore 43T1 Bank to service

3.14.2. Restoration of 43T1 bank to service:

- SCC shall close (or advise KY43 Operator to close) the 43AT1 breaker
- KY43 Operator shall advise Customer of readiness to restore 43F1 feeder to service
- SCC shall close (or advise KY43 Operator to close) the 43T1F1 breaker

3.15. To restore 43T1 Bank to service after automatic outage

If 43T1 bank trips auto due to fault:

KY43 Operator shall:

- Advise SCC about the outage
- Acknowledge all alarms and record relay operation details
- Reset relay targets

- Report relay operation details to SCC

SCC shall energize (or advise the KY43 Operator to energize) the bank **ONCE** by closing 43AT1 breaker

KY43 Operator shall advise Customer of readiness to restore 43T1 Bank to service

SCC shall close (or advise KY43 Operator to close) 43T1F1 breaker

KY43 Operator shall:

- Advise the Supervisor/Area Manager of item above
- Isolate the Transformer for maintenance men to work on the equipment if the operation above is not successful. See explanation.

3.16. To isolate 43T2 Transformer for work

SCC shall advise KY43 Operator to carry out the following:

- Inform Customer about readiness to take off 43T2 bank
- Request Customer on 43T2 Bank to take off their load
- If the station service is on 43T2 transfer supply to 43T1 by switching from AC2 to AC1
- Open AC1 Contactor/MCB to take off supply to 43T2 transformer auxiliaries

SCC shall carry out (or advise KY43 Operator to carry out) the following:

- Open 43T2F2 breaker
- Open 43AT2 breaker
- Check for no potential on 43T2 Bank

SCC shall advise KY43 Operator to carry out the following:

- Check opened 43D-T2 transfer disconnect switch and turn off its 125Vdc supply
- Open 43T2F2-F2 disconnect switch
- Open 43AT2-T2 disconnect switch and turn off its 125Vdc supply
- Open AC control MCB to 43T2 auxiliaries
- Open 125Vdc MCB to 43T2 primary and secondary protection and tag

with PC13

3.17. To restore 43T2 Bank to service after work

3.17.1. Prepare 43T2 bank for restoration:

KY43 Operator shall:

- Advise SCC when work on the transformer has been completed and permit(s) surrendered (including all Station Guarantees)
- Check for no potential on 43T2 Bank and temporary grounds removed
- Check opened 43D-T2 transfer disconnect switch and turn on its 125Vdc supply
- Close 43T2F2-F2 disconnect switch
- Turn on 125Vdc supply and close 43AT2-T2 disconnect switch
- Close AC control MCB to 43T2 auxiliaries and remove tag
- Close 125Vdc MCB to 43T2 primary and secondary protection and remove PC13 tag
- Advise SCC of readiness to restore 43T2 Bank to service

3.17.2. Restoration of 43T2 bank to service:

- SCC shall close (or advise KY43 Operator to close) the 43AT2 breaker
- KY43 Operator shall advise Customer of readiness to restore 43F2 feeder to service
- SCC shall close (or advise KY43 Operator to close) the 43T2F2 breaker

3.18. To restore 43T2 Bank to service after automatic outage

If 43T2 bank trips auto due to fault:

KY43 Operator shall:

- Advise SCC about the outage
- Acknowledge all alarms and record relay operation details
- Reset relay targets
- Report relay operation details to SCC

SCC shall energize (or advise the KY43 Operator to energize) the bank **ONCE** by closing 43AT2 breaker

KY43 Operator shall advise Customer of readiness to restore 43F2 feeder to service

SCC shall close (or advise KY43 Operator to close) 43T2F2 breaker

KY43 Operator shall:

- Advise the Supervisor/Area Manager of item above
- Isolate the Transformer for maintenance men to work on the equipment if the operation above is not successful. See explanation.

3.19. To isolate 43T3 Transformer for work

SCC shall advise KY43 Operator to carry out the following:

- Inform Customer about readiness to take off 43T3 bank
- Request Customer on 43T3 Bank to take off their load
- Open AC1 Contactor/MCB to take off supply to 43T3 transformer auxiliaries

SCC shall carry out (or advise KY43 Operator to carry out) the following:

- Check opened 43D-T3 transfer disconnect switch and turn off its 125Vdc supply
- Open 43T3F3 breaker
- Open 43AT3 breaker
- Check for no potential on 43T3 Bank

SCC shall advise KY43 Operator to carry out the following:

- Open 43T3F3-F3 disconnect switch
- Open 43AT3-T3 disconnect switch and turn off its 125Vdc supply
- Open AC control MCB to 43T3 auxiliaries and tag
- Open 125Vdc MCB to 43T3 primary and secondary protection and tag with PC13

3.20. To restore 43T3 Bank to service after work

3.20.1. Prepare 43T3 bank for restoration:

KY43 Operator shall:

- Advise SCC when work on the transformer has been completed and permit(s) surrendered (including all Station Guarantees)
- Check for no potential on 43T3 Bank and temporary grounds removed
- Check opened 43D-T3 transfer disconnect switch and turn on its 125Vdc supply
- Close 43T3F3-F3 disconnect switch
- Turn on 125Vdc supply and close 43AT3-T3 disconnect switch
- Close AC control MCB to 43T3 auxiliaries
- Close 125Vdc MCB to 43T3 primary and secondary protection and remove PC13 tag
- Advise SCC of readiness to restore 43T3 Bank to service

3.20.2. Restoration of 43T3 bank to service:

- SCC shall close (or advise KY43 Operator to close) the 43AT3 breaker
- KY43 Operator shall advise Customer of readiness to restore 43F3 feeder to service
- SCC shall close (or advise KY43 Operator to close) the 43T3F3 breaker

3.21. To restore 43T3 Bank to service after automatic outage

If 43T1 bank trips auto due to fault:

KY43 Operator shall:

- Advise SCC about the outage
- Acknowledge all alarms and record relay operation details
- Reset relay targets
- Report relay operation details to SCC

SCC shall energize (or advise the KY43 Operator to energize) the bank **ONCE** by closing 43AT3 breaker

KY43 Operator shall advise Customer of readiness to restore 43F3 feeder to

service

SCC shall close (or advise KY43 Operator to close) 43T3F3 breaker

KY43 Operator shall:

- Advise the Supervisor/Area Manager of item above

- Isolate the Transformer for maintenance men to work on the equipment if the operation above is not successful. See explanation.

3.22. To Isolate 43T1F1 Breaker for work

- KY43 Operator shall request Station Guarantee from Customer on 43F1 feeder

SCC shall advise KY43 Operator to carry out the following:

- Inform Customer about readiness to take off 43T1 bank

- Request Customer on 43T1 Bank to take off their load

- If the station service is on 43T1 transfer supply to 43T2 by switching from AC1 to AC2
- Open AC1 Contactor/MCB to take off supply to 43T1 transformer auxiliaries

SCC shall carry out (or advise KY43 Operator to carry out) the following:

- Check opened 43D-T1 transfer disconnect switch and turn on its 125Vdc supply

- Open 43T1F1 breaker

- Open 43AT1 breaker

- Check for no potential on 43T1 Bank

SCC shall advise KY43 Operator to carry out the following:

- Open 43T1F1-F1 disconnect switch

- Open 43AT1-T1disconnect switch and turn off its 125Vdc supply

3.23. To restore 43T1F1 Breaker to service after work

3.23.1. Prepare 43T1F1 breaker for restoration:

KY43 Operator shall:

- Advise SCC when work on the 43T1F1 breaker has been completed and permit(s) surrendered (including all Station Guarantees)

- Check for no potential on 43T1F1 Breaker and temporary grounds removed

- Check opened 43D-T1 transfer disconnect switch and turn on its 125Vdc supply

- Close 43T1F1-F1 disconnect switch

- Turn on 125Vdc supply and close 43AT1-T1 disconnect switch

- Close AC control MCB to 43T1 auxiliaries

3.23.2. Restoration of 43T1F1 breaker to service:

- SCC shall close (or advise KY43 Operator to close) the 43AT1 breaker

- KY43 Operator shall advise Customer of readiness to restore 43F1 feeder to service

- SCC shall close (or advise KY43 Operator to close) the 43T1F1 breaker

3.24. To Isolate 43T2F2 Breaker for work

- KY43 Operator shall request Station Guarantee from Customer on 43T2F2 breaker

SCC shall advise KY43 Operator to carry out the following:

- Inform Customer about readiness to take off 43T2 bank

- Request Customer on 43T2 Bank to take off their load

- If the station service is on 43T2 transfer supply to 43T1 by switching from AC1 to AC2

- Open AC1 Contactor/MCB to take off supply to 43T2 transformer auxiliaries

SCC shall carry out (or advise KY43 Operator to carry out) the following:

- Check opened 43D-T2 transfer disconnect switch and turn off its 125Vdc supply

- Open 43T2F2 breaker

- Open 43AT2 breaker

- Check for no potential on 43T2 Bank

SCC shall advise KY43 Operator to carry out the following:

- Open 43T2F2-F2 disconnect switch
- Open 43AT2-T2 disconnect switch and turn off its 125Vdc supply

3.25. To restore 43T2F2 Breaker to service after work

3.25.1. Prepare 43T2F2 breaker for restoration:

KY43 Operator shall:

- Advise SCC when work on the 43T2F2 breaker has been completed and permit(s) surrendered (including all Station Guarantees)
- Check for no potential on 43T2F2 Breaker and temporary grounds removed
- Check opened 43D-T2 transfer disconnect switch and turn on its 125Vdc supply
- Close 43T2F2-T2 disconnect switch
- Turn on 125Vdc supply and close 43AT2-T2 disconnect switch

3.25.2. Restoration of 43T2F2 breaker to service:

- SCC shall close (or advise KY43 Operator to close) the 43AT2 breaker
- KY43 Operator shall advise Customer of readiness to restore 43F2 feeder to service
- SCC shall close (or advise KY43 Operator to close) the 43T2F2 breaker

3.26. To Isolate 43T3F3 Breaker for work

- KY43 Operator shall request Station Guarantee from Customer on 43T3F3 breaker

SCC shall advise KY43 Operator to carry out the following:

- Inform Customer about readiness to take off 43T3 bank
- Request Customer on 43T3 Bank to take off their load
- Open AC1 Contactor/MCB to take off supply to 43T3 transformer

auxiliaries

SCC shall carry out (or advise KY43 Operator to carry out) the following:

- Check opened 43D-T3 transfer disconnect switch and turn on its 125Vdc supply
- Open 43T3F3 breaker
- Open 43AT3 breaker
- Check for no potential on 43T3 Bank

SCC shall advise KY43 Operator to carry out the following:

- Open 43T3F3-F3 disconnect switch
- Open 43AT3-T3 disconnect switch and Turn off 125Vdc supply

3.27. To restore 43T3F3 Breaker to service after work

3.27.1. Prepare 43T3F3 breaker for restoration:

KY43 Operator shall:

- Advise SCC when work on the 43T3F3 breaker has been completed and permit(s) surrendered (including all Station Guarantees)
- Check for no potential on 43T3F3 Breaker and temporary grounds removed
- Check opened 43D-T3 transfer disconnect switch and turn on its 125Vdc supply
- Close 43T3F3-F3 disconnect switch
- Turn on 125Vdc supply and close 43AT3-T3 disconnect switch

3.27.2. Restoration of 43T3F3 breaker to service:

- SCC shall close (or advise KY43 Operator to close) the 43AT3 breaker
- KY43 Operator shall advise Customer of readiness to restore 43F3 feeder to service
- SCC shall close (or advise KY43 Operator to close) the 43T3F3 breaker

4. Explanation

Transformer and Bus automatic outages may be caused by the following relay operations:

- Transformer differential lockout relay-86T
- Transformer Bucholtz relay or high temperature lockout relay-86G
- Transformer overcurrent back up relays

a. If 86T operates, the breakers which have opened auto, cannot be reclosed until the lockout relay has been reset or the lockout feature has been by-passed.

   - Carry out thorough inspection of the Transformer and the 34kV and 11kV structures looking for oil leakage, shattered insulators on the structures and dead birds or reptiles

b. 86T can be reset manually immediately after an automatic outage if the station is attended.

c. 86G cannot be reset unless transformer gas and / or temperature conditions are normal or the MCB to the transformer protective relays is off.

NOTE:

I. If it has been necessary to restore the MCB to the transformer relay in order to reset 86G and restore a healthy bank to service, they shall not be restored until the gas and /or temperature conditions on the faulted bank is rectified.

II. Operation of 86T or 86G lockout relays may be due to major transformer faults hence No attempt should be made to re-energize the bank until Electrical Maintenance staff have inspected and meggered the Transformer.

ISOLATION AND DE-ENERGIZING

1. Open the necessary breaker(s) to take the line off potential.
2. Check all three phases off potential using the Multifunction meter or Analog Voltmeter or for Pole discrepancies on the panel.
3. Open the necessary disconnect switches or MODS to isolate the line from all sources of supply.
4. Close the Grounding Switch.
5. Report completion of the isolation and de-energizing at all assisting stations, to the where the Protection Guarantee is to be issued and to System Control Centre.
6. Issue Work or Work and Test Permit to the workman.

ORDER TO OPERATE

1. An O.TO. (Order-To-Operate) to isolate a line is as follows:

    a. Line Voltage - Check all three phases off potential
    b. Line Breaker - Check Open
    c. Line Disconnect Switches - Open, lock and Tag (MCB to MOD Turn-off)

2. Due to communication difficulties arising when grounds are placed on a line it is necessary to issue a Protection Guarantee on the line before grounds are placed. A work and Test Permit allows for closing and opening permanent grounds switches while the Permit is in effect.

3. If work is to be done a permanent ground switches a PC 14 to close the ground switch is not required.

    The station has two 161kV buses. The main 'A' and bus provide the normal points of supply to all circuits such as B2KY, K4KY and KY6SN lines, 43T1 transformer, 43T2 transformer and 43T3 transformers. The 'D' bus provides the necessary by-pass route for only one circuit at a time.

5. Approval

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Director, TSD