

HOPE CREEK GENERATING STATION

HC.OP-AR.ZZ-0016(Q) - Rev. 14

OVERHEAD ANNUNCIATOR WINDOW BOX E3

USE CATEGORY: II

- Packages and Affected Document Numbers incorporated into this revision:
CP No. _____ CP Rev. _____ AD No. _____ Rev No. _____ None
 - The following OPEX were incorporated into this revision: None
 - The following OTSCs were incorporated into this revision: None
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REVISION SUMMARY

Corrects Attachments B2, B3, C2, C3, D2 and D3 to reference the proper PAX breaker numbers. This was recently updated in HC.OP-SO.MF-0001(Z), verified in 70113105 and is editorial. (70113105-0030)

IMPLEMENTATION REQUIREMENTS

Effective Date 9/17/10

None

OVERHEAD ANNUNCIATOR WINDOW BOX E3

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ATTACHMENT A1

**STA SERVICE
TRANSFORMER
1AX502 TRBL**

Window Location E3-A1

OPERATOR ACTION:

IF 1AX502 Transformer Lockout has occurred,
THEN ENSURE 1BX502 supplies the 7.2KV buses.

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
N/A	1AX502 Trouble	Alarm or Transformer Lockout
N/A	Loss of power to annunciator panel on transformer.	Alarm only

REFERENCES: E2-47(4)-10

E-6741-0

ATTACHMENT A1

CONDITION	<u>1AX502 Transformer Trouble</u> SETPOINT	<u>N/A</u>
INDICATION	<u>N/A</u> ORIGIN	<u>1AX502</u>

AUTOMATIC ACTION:

Alarm or Transformer lockout (on Fault Pressure)

OPERATOR ACTION:

1. IF 1AX502 Transformer Lockout has occurred,
THEN ENSURE 1BX502 supplies the 7.2KV buses.
2. IF transfer has not occurred,
THEN ATTEMPT (once) to close E(F)-12 FEED BRKR
in accordance with HC.OP-SO.NA-0001(Z), 7.2KV System Operation.
3. IF alarm only
THEN ENSURE bus voltage is 7.2KV
4. IF tap changer malfunction has occurred
AND manual operation is desired,
THEN REFER TO HC.OP-SO.MC-0001(Z), for direction on adjusting
13.8Kv to 7.2Kv Transformers 1AX502 (1BX502) Load Tap.
5. **REFER TO** HC.OP-DL.ZZ-0003(Q), as necessary, to determine allowable bus voltage.
6. IF unable to maintain proper bus voltage
THEN REFER TO HC.OP-SO.NA-0001(Z), for direction on shifting 7.2Kv Busses
10A110(E) AND 10A120(F) to Alternate Breaker Alignments

CAUSE	CORRECTIVE ACTION
1. Transformer trouble	1A. DISPATCH NEO to 1AX502 Transformer to determine cause of alarm in accordance with HC.OP-AR.NA-0001(Z).

REFERENCES: E2-47(4)-10

ATTACHMENT A1

CONDITION	Loss of Power to Annunciator Panel on Transformer	SETPOINT	N/A
INDICATION	N/A ORIGIN		1AX502

AUTOMATIC ACTION:

Alarm only

OPERATOR ACTION:

None

CAUSE/SYMPTOM ACTION	
1. Loss of panel power	1A. REQUEST NEO to determine cause of panel loss of power. 1B. REQUEST SM/CRS to initiate corrective action.

REFERENCES: E2-47(4)-10

ATTACHMENT A2

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
D4857	13.8KV BUS 3-4 DIFF LKOUT RLY	<ol style="list-style-type: none"> 1. Breaker BS2-3 trips. 2. Breaker BS4-5 trips.
D4858	13.8KV BRKR 1-2 FAIL LKOUT RLY	<ol style="list-style-type: none"> 1. 500KV Breaker BS5-1 trips. 2. 500KV Breaker BS1-3 trips. 3. 13.8KV Breaker BS2-3 trips. 4. 13.8KV Breaker BS9-0 trips.
D4861	13.8KV BRKR 2-3 FAIL LKOUT RLY	<ol style="list-style-type: none"> 1. Breaker BS1-2 trips. 2. Breaker BS4-5 trips.
D4865	13.8KV BRKR 4-5 FAIL LKOUT RLY	<ol style="list-style-type: none"> 1. 500KV Breaker BS2-4 trips. 2. 500KV Breaker BS2-6 trips <u>AND</u> is blocked from closing. 3. 13.8KV Breaker BS2-3 trips. 4. 13.8KV Breaker BS6-7 trips. 5. <u>IF</u> operating at >30% power, Rx may scram on P/L mismatch.

ATTACHMENT A3

4.16KV 1E
INCM BRKR
EMER TKOVR

Window Location E3-A3

OPERATOR ACTION:

DISPATCH an NEO to Vital Bus A(B,C,D) to determine reason for EMERGENCY being selected on local breaker.

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
D4571	4.16KV BUS A401 INC BRKR ETO	Loss of breaker control in Control Room.
D4572	4.16KV BUS A402 INC BRKR ETO	Loss of breaker control in Control Room.
D4573	4.16KV BUS A403 INC BRKR ETO	Loss of breaker control in Control Room.
D4574	4.16KV BUS A404 INC BRKR ETO	Loss of breaker control in Control Room.

REFERENCES: E-3060-0

E-3400-0, Sht. 2

ATTACHMENT A4

STA SERVICE
TRANSFORMER
1BX502 TRBL

Window Location E3-A4

OPERATOR ACTION:

IF 1BX502 Transformer Lockout has occurred,
ENSURE 1AX502 supplies the 7.2KV buses.

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
N/A	1BX502 trouble	Alarm or Transformer Lockout
N/A	Loss of power to annunciator panel on transformer.	Alarm only

REFERENCES: E2-47 Sht. 4

E-6741-0

ATTACHMENT A4

CONDITION	<u>1BX502 Transformer Trouble</u> SETPOINT	<u>N/A</u>
INDICATION	<u>N/A</u> ORIGIN	<u>1BX502</u>

AUTOMATIC ACTION:

Alarm or Transformer lockout (on Fault Pressure)

OPERATOR ACTION:

1. IF 1BX502 Transformer Lockout has occurred, **ENSURE** 1AX502 supplies the 7.2KV buses.
2. IF transfer has not occurred, **ATTEMPT** once to close E(F)-11 FEED BRKR in accordance with HC.OP-SO.NA-0001(Z) 7.2KV System Operation.
3. IF alarm only, **ENSURE** bus voltage is 7.2KV.
4. IF tap changer malfunction has occurred AND manual operation is desired, THEN REFER TO HC.OP-SO.MC-0001(Z), for direction on adjusting 13.8Kv to 7.2Kv Transformers 1AX502 (1BX502) Load Tap.
5. **REFER TO** HC.OP-DL.ZZ-0003(Q), as necessary, to determine allowable bus voltage.
6. IF unable to maintain proper bus voltage THEN REFER TO HC.OP-SO.NA-0001(Z), for direction on shifting 7.2Kv Busses 10A110(E) and 10A120(F) to Alternate Breaker Alignments.

CAUSE CORRE	CTIVE ACTION
1. Transformer trouble	1A. DISPATCH NEO to 1BX502 Transformer to determine cause of alarm IAW HC.OP-AR.NA-0001(Z).

REFERENCES: E2-47(4)-10

ATTACHMENT A4

CONDITION	Loss of Power to Annunciator Panel on Transformer	SETPOINT	N/A
INDICATION	N/A	ORIGIN	1AX502

AUTOMATIC ACTION:

Alarm only

OPERATOR ACTION:

RESTORE annunciator panel power.

CAUSE	CORRECTIVE ACTION
1. Loss of panel power	1A. REQUEST NEO to determine cause of panel loss of power 1B. REQUEST SM/CRS to initiate corrective action.

REFERENCES: E2-47(4)-10

ATTACHMENT B1

STA SERVICE
TRANSFORMER
1AX501 TRBL

Window Location E3-B1

OPERATOR ACTION:

1. IF 1AX501 Transformer Lockout has occurred,
THEN ENSURE 1BX501 supplies 4.16KV Class 1E busses, 10A101
AND 10A102.
2. **ENSURE** compliance with operability requirements of T/S 3/4.8.1. A.C. Sources.

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
N/A	Transformer 1AX501 trouble	Alarm or Transformer Lockout
N/A	Loss of power to local annunciator panel	Alarm only

REFERENCES: E2-76(4)-8

E-6741-0

ATTACHMENT B1

CONDITION	<u>1AX501 Transformer Trouble</u> SETPOINT	<u>N/A</u>
INDICATION	<u>N/A</u> ORIGIN	<u>1AX501</u>

AUTOMATIC ACTION:

Alarm or Transformer lockout (on Fault Pressure).

OPERATOR ACTION:

1. IF 1AX501 Transformer Lockout has occurred, **ENSURE** 1BX501 supplies the 4.16KV Class 1E busses, 10A101 and 10A102.
2. IF transfer has not occurred, **ATTEMPT** once to close feeder breakers IAW HC.OP-SO.PB-0001(Q), 4.16KV System Operation.
3. **ENSURE** bus voltage remains within required range.
(REFER TO HC.OP-DL.ZZ-0002(3)(Q), Control Console Log(s))
[70038194]
4. IF tap changer malfunction has occurred and manual operation is desired, **THEN REFER TO** HC.OP-SO.MC-0001(Z), for direction on adjusting 13.8KV to 4.16KV Transformer 1AX501 Load Tap.
5. IF unable to maintain proper bus voltage **THEN REFER TO** HC.OP-SO.PB-0001(Z), for direction on shifting 4.16KV Busses to Alternate Breaker Alignments.

CAUSE CORRE	CTIVE ACTION
1. Transformer trouble	1A. DISPATCH NEO to 1AX501 Transformer to determine cause of alarm IAW HC.OP-AR.NB-0001(Z).

REFERENCES: E2-76(4)-8

ATTACHMENT B1

CONDITION	Loss of Power to Annunciator Panel on Transformer	SETPOINT	N/A
INDICATION	N/A ORIGIN		1AX501

AUTOMATIC ACTION:

Alarm only

OPERATOR ACTION:

RESTORE annunciator panel power.

CAUSE CORRE	CTIVE ACTION
1. Loss of panel power	1A. REQUEST NEO to determine cause of panel loss of power. 1B. REQUEST SM/CRS to initiate corrective action.

REFERENCES: E2-76(4)-8

ATTACHMENT B2

CKT BREAKER
(3)52-BS9-0
TROUBLE

Window Location E3-B2

OPERATOR ACTION:

DISPATCH an NEO to the 13.8KV Switchyard BS9-0 local panel to determine cause of alarm.

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
N/A	13.8KV Swyd Breaker BS9-0 Air Pressure Low and Compressor Motor Undervoltage.	Alarm only

REFERENCES: E-0103-0, Sht. A E-3032-0
 E-6740-0 PSBP 249001-A-1818-4
 PSBP 249233-A-1828-1

ATTACHMENT B3

CKT BREAKER
(3)52-BS1-2
TROUBLE

Window Location E3-B3

OPERATOR ACTION:

DISPATCH an NEO to the 13.8KV Switchyard BS1-2 local panel to determine cause of alarm.

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
N/A	13.8KV Swyd Breaker BS1-2 Air Pressure Low and Compressor Motor Undervoltage.	Alarm only

REFERENCES: E-0103-0, Sht. A E-3032-0
 E-6740-0 PSBP 249001-A-1818-4
 PSBP 249233-A-1828-1

ATTACHMENT B3

CONDITION	13.8KV Bus BS1-2 Breaker Trouble	SETPOINT	145 psig
INDICATION	N/A ORIGIN		N/A

AUTOMATIC ACTION:

Alarm only

OPERATOR ACTION:

DISPATCH an EO to 13.8KV Switchyard BS1-2 local panel to determine cause of alarm.

CAUSE CORRE	CTIVE ACTION
1. Compressor motor trip	1A. CHECK closed the following breakers: <ol style="list-style-type: none"> 1. 208VAC Compressor Motor breaker 2. PAX1 Distribution Panel 208/120VAC Brkr #13 1B. REQUEST SM/CRS to initiate corrective action.
2. Improper valve lineup	2A. CHECK Air Receiver pressure \leq 145 psig. 2B. CHECK open Air Receiver Outlet Valve 2C. REQUEST SM/CRS to initiate corrective action.

REFERENCES: E-0103-0, Sht. A E-3032-0
 E-6740-0 PSBP 249001-A-1818-4
 PSBP 249233-A-1828-1

ATTACHMENT B4

STA SERVICE
TRANSFORMER
1BX501 TRBL

Window Location E3-B4

OPERATOR ACTION:

1. IF 1BX501 Transformer Lockout has occurred,
ENSURE 1AX501 supplies 4.16KV Class 1E busses, 10A101 and 10A102.
2. **ENSURE** compliance with operability requirements of T/S 3/4.8.1. A.C. Sources.

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
N/A	Transformer 1BX501 Trouble	Alarm or Transformer Lockout
N/A	Loss of power to local annunciator panel	Alarm only

REFERENCES: E2-76(4)-8

E-6741-0

ATTACHMENT B4

CONDITION	<u>1BX501 Transformer Trouble</u> SETPOINT	<u>N/A</u>
INDICATION	<u>N/A</u> ORIGIN	<u>1BX501</u>

AUTOMATIC ACTION:

Alarm or Transformer lockout (on Fault Pressure).

OPERATOR ACTION:

1. IF 1BX501 Transformer Lockout has occurred,
ENSURE 1AX501 supplies the 4.16KV Class 1E busses, 10A101 and 10A102.
2. IF transfer has not occurred,
ATTEMPT once to close feeder breakers IAW HC.OP-SO.PB-0001(Q)
4.16KV System Operation.
3. **ENSURE** bus voltage remains within required range.
(**REFER TO** HC.OP-DL.ZZ-0002(3)(Q), Control Console Log(s))
[70038194]
4. IF tap changer malfunction has occurred and manual operation is desired,
THEN REFER TO HC.OP-SO.MC-0001(Z), for direction on adjusting
13.8KV to 4.16KV Transformer 1BX501 Load Tap.
5. IF unable to maintain proper bus voltage
THEN REFER TO HC.OP-SO.PB-0001(Z), for direction on shifting
4.16KV Busses to Alternate Breaker Alignments.

CAUSE CORRE	CTIVE ACTION
1. Transformer trouble	1A. DISPATCH NEO to 1BX501 Transformer to determine cause of alarm IAW HC.OP-AR.NB-0001(Z).

REFERENCES: E2-76(4)-8

ATTACHMENT B4

CONDITION	Loss of Power to Annunciator Panel on Transformer	SETPOINT	N/A
INDICATION	N/A	ORIGIN	1BX501

AUTOMATIC ACTION:

Alarm only

OPERATOR ACTION:

RESTORE annunciator panel power.

CAUSE CORRE	CTIVE ACTION
<p>1. Loss of panel power</p>	<p>1A. REQUEST NEO to determine cause of panel loss of power.</p> <p>1B. REQUEST SM/CRS to initiate corrective action.</p>

REFERENCES: E2-76(4)-8

ATTACHMENT C1

STA SERVICE
TRANSFORMER
1AX503 TRBL

Window Location E3-C1

OPERATOR ACTION:

IF 1AX503 Transformer Lockout has occurred,
ENSURE 1BX503 supplies 4.16KV busses 10A502 and 10A501.

NOTE
 This overhead alarm has re-flash capability.

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
N/A	Transformer 1AX503 Trouble	Alarm or Transformer Lockout
N/A	Loss of power to local annunciator panel	Alarm only

REFERENCES: E2-75(2)-9

E-6741-0

ATTACHMENT C1

CONDITION	<u>1AX503 Transformer Trouble</u> SETPOINT	<u>N/A</u>
INDICATION	<u>N/A</u> ORIGIN	<u>1AX503</u>

AUTOMATIC ACTION:

Alarm or Transformer lockout (on Fault Pressure).

OPERATOR ACTION:

1. IF 1AX503 Transformer Lockout has occurred, **ENSURE** 1BX503 supplies the 4.16KV busses 10A502 and 10A501.
2. IF transfer has not occurred, **ATTEMPT** once to close feeder breakers IAW HC.OP-SO.PB-0001(Q) 4.16KV System Operation.
3. IF alarm only, **ENSURE** bus voltage is 4.16KV.
4. IF tap changer malfunction has occurred and manual operation is desired, **THEN REFER TO** HC.OP-SO.MC-0001(Z), for direction on adjusting 13.8KV to 4.16KV Transformer 1AX503 Load Tap.
5. **REFER TO** HC.OP-DL.ZZ-0003(Q), as necessary, to determine allowable bus voltage.
6. IF unable to maintain proper bus voltage **THEN REFER TO** HC.OP-SO.PB-0001(Z), for direction on shifting 4.16KV Busses to Alternate Breaker Alignments.

CAUSE CORRE	CTIVE ACTION
1. Transformer trouble	1A. DISPATCH NEO to 1AX503 Transformer to determine cause of alarm IAW HC.OP-AR.NB-0002(Z).

REFERENCES: E2-75(2)-9

ATTACHMENT C1

CONDITION	Loss of Power to Annunciator Panel on Transformer	SETPOINT	N/A
INDICATION	N/A	ORIGIN	1AX503

AUTOMATIC ACTION:

Alarm only

OPERATOR ACTION:

RESTORE annunciator panel power.

CAUSE CORRE	CTIVE ACTION
<p>1. Loss of panel power</p>	<p>1A. REQUEST NEO to determine cause of panel loss of power.</p> <p>1B. REQUEST SM/CRS to initiate corrective action.</p>

REFERENCES: E2-75(2)-9

ATTACHMENT C2

CKT BREAKER
(3)52-BS7-8
TROUBLE

Window Location E3-C2

OPERATOR ACTION:

DISPATCH an NEO to the 13.8KV Switchyard BS7-8 local panel to determine cause of alarm.

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
N/A	13.8KV Swyd Breaker BS7-8 Air Pressure Low and Compressor Motor Undervoltage.	Alarm only

REFERENCES: E-0103-0, Sht. A E-3032-0
 E-6740-0 PSBP 249001-A-1818-4
 PSBP 249233-A-1828-1

ATTACHMENT C2

CONDITION	13.8KV Bus BS7-8 Breaker Trouble	SETPOINT	145 psig
INDICATION	N/A ORIGIN		N/A

AUTOMATIC ACTION:

Alarm only

OPERATOR ACTION:

DISPATCH an NEO to the 13.8KV Switchyard BS7-8 local panel to determine cause of alarm.

CAUSE CORRE	CTIVE ACTION
1. Compressor motor trip	1A. CHECK closed the following breakers: <ol style="list-style-type: none"> 1. 208VAC Compressor Motor breaker 2. PAX2 Distribution Panel 208/120VAC Brkr #14 1B. REQUEST SM/CRS to initiate corrective action.
2. Improper valve lineup	2A. CHECK Air Receiver pressure \leq 145 psig. 2B. CHECK open Air Receiver Outlet Valve 2C. REQUEST SM/CRS to initiate corrective action.

REFERENCES: E-0103-0, Sht. A E-3032-0
 E-6740-0 PSBP 249001-A-1818-4
 PSBP 249233-A-1828-1

ATTACHMENT C3

CKT BREAKER
(3)52-BS2-3
TROUBLE

Window Location E3-C3

OPERATOR ACTION:

DISPATCH an NEO to the 13.8KV Switchyard BS2-3 local panel to determine cause of alarm.

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
N/A	13.8KV Swyd Breaker BS2-3 Air Pressure Low and Compressor Motor Undervoltage.	Alarm only

REFERENCES: E-0103-0, Sht. A E-3032-0
 E-6740-0 PSBP 249001-A-1818-4
 PSBP 249233-A-1828-1

ATTACHMENT C3

CONDITION	13.8KV Bus BS2-3 Breaker Trouble	SETPOINT	145 psig
INDICATION	N/A ORIGIN		N/A

AUTOMATIC ACTION:

Alarm only

OPERATOR ACTION:

DISPATCH an NEO to the 13.8KV Switchyard BS2-3 local panel to determine cause of alarm.

CAUSE CORRE	CTIVE ACTION
1. Compressor motor trip	1A. CHECK closed the following breakers: <ol style="list-style-type: none"> 1. 208VAC Compressor Motor breaker 2. PAX1 Distribution Panel 208/120VAC Brkr #14 1B. REQUEST SM/CRS to initiate corrective action.
2. Improper valve lineup	2A. CHECK Air Receiver pressure \leq 145 psig. 2B. CHECK open Air Receiver Outlet Valve 2C. REQUEST SM/CRS to initiate corrective action.

REFERENCES: E-0103-0, Sht. A E-3032-0
 E-6740-0 PSBP 249001-A-1818-4
 PSBP 249233-A-1828-1

ATTACHMENT C4

**STA SERVICE
TRANSFORMER
1BX503 TRBL**

Window Location E3-C4

OPERATOR ACTION:

IF 1BX503 Transformer Lockout has occurred,
ENSURE 1AX503 supplies 4.16KV busses 10A501 and 10A502.

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
N/A	Transformer 1BX503 Trouble	Alarm or Transformer Lockout
N/A	Loss of power to local annunciator panel	Alarm only

REFERENCES: E2-75(2)-9

E-6741-0

ATTACHMENT C4

CONDITION	<u>1BX503 Transformer Trouble</u> SETPOINT	<u>N/A</u>
INDICATION	<u>N/A</u> ORIGIN	<u>1BX503</u>

AUTOMATIC ACTION:

Alarm or Transformer lockout (on Fault Pressure).

OPERATOR ACTION:

1. IF 1BX503 Transformer Lockout has occurred, **ENSURE** 1AX503 supplies the 4.16KV busses 10A501 and 10A502.
2. IF transfer has not occurred, **ATTEMPT** once to close feeder breakers IAW HC.OP-SO.PB-0001(Q) 4.16KV System Operation.
3. IF alarm only, **ENSURE** bus voltage is 4.16KV.
4. IF tap changer malfunction has occurred and manual operation is desired, **THEN REFER TO** HC.OP-SO.MC-0001(Z), for direction on adjusting 13.8KV to 4.16KV Transformer 1BX503 Load Tap.
5. **REFER TO** HC.OP-DL.ZZ-0003(Q), as necessary, to determine allowable bus voltage.
6. IF unable to maintain proper bus voltage **THEN REFER TO** HC.OP-SO.PB-0001(Z), for direction on shifting 4.16KV Busses to Alternate Breaker Alignments.

CAUSE CORRE	CTIVE ACTION
1. Transformer trouble	1A. DISPATCH NEO to 1BX503 Transformer to determine cause of alarm IAW HC.OP-AR.NB-0002(Z).

REFERENCES: E2-75(2)-9

ATTACHMENT C4

CONDITION	Loss of Power to Annunciator Panel on Transformer	SETPOINT	N/A
INDICATION	N/A	ORIGIN	1BX503

AUTOMATIC ACTION:

Alarm only

OPERATOR ACTION:

RESTORE annunciator panel power.

CAUSE CORRE	CTIVE ACTION
<p>1. Loss of panel power</p>	<p>1A. REQUEST NEO to determine cause of panel loss of power.</p> <p>1B. REQUEST SM/CRS to initiate corrective action.</p>

REFERENCES: E2-75(2)-9

ATTACHMENT C5

**WTR CHILLER
TRANSFORMER
1AX104 TRBL**

Window Location E3-C5

OPERATOR ACTION:

DISPATCH NEO to 1AX104 Turbine Building Transformer for Water Chiller to check hot spot temperature indication.

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
N/A	Water Chiller Transformer 1AX104 Trouble	Alarm only

REFERENCES: E-6741-0

10855-E7-8, (1)-3

ATTACHMENT C5

CONDITION	Water Chiller Transformer 1AX104 Trouble	SETPOINT	200°C/210°C/220°C
INDICATION	N/A ORIGIN		1AX104

AUTOMATIC ACTION:

Alarm only

OPERATOR ACTION:

DISPATCH NEO to 1AX104 Turbine Building Transformer for Water Chiller to check hot spot temperature indication.

CAUSE CORRE	CTIVE ACTION
1. Transformer excessive load or fault	1A. START standby Chiller IAW HC.OP-SO.GB-0001(Q) Chilled Water System Operation. 1B. STOP AK111 Chiller IAW HC.OP-SO.GB-0001(Q) Chilled Water System Operation. 1C. REQUEST SM/CRS to initiate corrective action.
2. Inadequate transformer ventilation	2A. CHECK transformer ventilation openings for blockage. 2B. CHECK Turbine Bldg. Vent operation IAW HC.OP-SO.GE-0001(Z) Turbine Building Ventilation Operation. 2C. REQUEST SM/CRS to initiate corrective action.

REFERENCES: E-6741-0 10855-E7-8, (1)-3

ATTACHMENT D1

CONDITION	<u>Transformer 1DX501 Trouble</u> SETPOINT	<u>N/A</u>
INDICATION	<u>N/A</u> ORIGIN	<u>1DX501</u>

AUTOMATIC ACTION:

Alarm or Transformer lockout (on Fault Pressure).

OPERATOR ACTION:

1. IF 1DX501 Transformer Lockout has occurred, **ENSURE** 1CX501 supplies 4.16KV busses 10A103 and 10A104.
2. IF the transfer has not occurred, **ATTEMPT** once to close feeder breakers IAW HC.OP-SO.PB-0001(Q) 4.16KV System Operation.
3. IF alarm only, **ENSURE** bus voltage is 4.16KV.
4. IF tap changer malfunction has occurred and manual operation is desired, **THEN REFER TO** HC.OP-SO.MC-0001(Z), for direction on adjusting 13.8KV to 4.16KV Transformer 1DX501 Load Tap.
5. **REFER TO** HC.OP-DL.ZZ-0003(Q), as necessary, to determine allowable bus voltage.
6. IF unable to maintain proper bus voltage **THEN REFER TO** HC.OP-SO.PB-0001(Z), for direction on shifting 4.16KV Busses to Alternate Breaker Alignments.

CAUSE CORRE	CTIVE ACTION
1. Transformer trouble	1A. DISPATCH NEO to 1DX501 Transformer to determine cause of alarm IAW HC.OP-AR.NB-0001(Z).

REFERENCES: E2-76(4)-8

ATTACHMENT D1

CONDITION	Loss of power to Annunciator Panel on Transformer	SETPOINT	N/A
INDICATION	N/A	ORIGIN	1DX501

AUTOMATIC ACTION:

Alarm only

OPERATOR ACTION:

RESTORE annunciator panel power.

CAUSE CORRE	CTIVE ACTION
<p>1. Loss of panel power</p>	<p>1A. REQUEST NEO to determine cause of panel loss of power.</p> <p>1B. REQUEST SM/CRS to initiate corrective action.</p>

REFERENCES: E2-76(4)-8

ATTACHMENT D2

CKT BREAKER
(3)52-BS6-7
TROUBLE

Window Location E3-D2

OPERATOR ACTION:

DISPATCH an NEO to 13.8KV Switchyard BS6-7 local panel to determine cause of alarm.

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
N/A	13.8KV Swyd Breaker BS6-7 Air Pressure Low and Compressor Motor Undervoltage	Alarm only

REFERENCES: E-0103-0, Sht. A E-3032-0
 E-6740-0 PSBP 249001-A-1818-4
 PSBP 249233-A-1828-1

ATTACHMENT D3

CKT BREAKER
(3)52-BS4-5
TROUBLE

Window Location E3-D3

OPERATOR ACTION:

DISPATCH an NEO to 13.8KV Switchyard BS4-5 local panel to determine cause of alarm.

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
N/A	13.8KV Swyd Breaker BS4-5 Air Pressure Low and Compressor Motor Undervoltage	Alarm only

REFERENCES: E-0103-0, Sht. A E-3032-0
 E-6740-0 PSBP 249001-A-1818-4
 PSBP 249233-A-1828-1

ATTACHMENT D3

CONDITION	<u>13.8KV Bus BS4-5 Breaker SETPOINT</u>	<u>145 psig</u>
INDICATION	<u>N/A ORIGIN</u>	<u>N/A</u>

AUTOMATIC ACTION:

Alarm only

OPERATOR ACTION:

DISPATCH an NEO to 13.8KV Switchyard BS4-5 local panel to determine cause of alarm.

CAUSE CORRE	CTIVE ACTION
1. Compressor Motor trip	1A. CHECK closed the following breakers: 1. 208VAC Compressors Motor breaker. 2. PAX1 Distribution Panel ³ 208/120VAC Brkr #19. 1B. REQUEST SM/CRS to initiate corrective action.
2. Improper valve lineup	2A. CHECK air receiver pressure < 145 psig. 2B. CHECK open Air Receiver Outlet Valve. 2C. REQUEST SM/CRS to initiate corrective action.

REFERENCES: E-0103-0, Sht. A E-3032-0
 E-6740-0 PSBP 249001-A-1818-4
 PSBP 249233-A-1828-1

ATTACHMENT D4

STA SERVICE
TRANSFORMER
1CX501 TRBL

Window Location E3-D4

OPERATOR ACTION:

IF 1CX501 Transformer Lockout has occurred,
ENSURE 1DX501 supplies 4.16KV busses 10A103 and 10A104.

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
N/A	Transformer 1CX501 Trouble	Alarm or Transformer lockout
N/A	Loss of power to local annunciator panel	Alarm only

REFERENCES: E-6741-0 E2-76(4)-8

ATTACHMENT D4

CONDITION	<u>Transformer 1CX501 Trouble</u> SETPOINT	<u>N/A</u>
INDICATION	<u>N/A</u> ORIGIN	<u>1CX501</u>

AUTOMATIC ACTION:

Alarm or Transformer lockout (on Fault Pressure).

OPERATOR ACTION:

1. IF 1CX501 Transformer Lockout has occurred, **ENSURE** 1DX501 supplies 4.16KV busses 10A103 and 10A104.
2. IF the transfer has not occurred, **ATTEMPT** once to close feeder breakers IAW HC.OP-SO.PB-0001(Q) 4.16KV System Operation.
3. IF alarm only, **ENSURE** bus voltage is 4.16KV.
4. IF tap changer malfunction has occurred and manual operation is desired, **THEN REFER** TO HC.OP-SO.MC-0001(Z), for direction on adjusting 13.8KV to 4.16KV Transformer 1CX501 Load Tap.
5. **REFER TO** HC.OP-DL.ZZ-0003(Q), as necessary, to determine allowable bus voltage.
6. IF unable to maintain proper bus voltage **THEN REFER TO** HC.OP-SO.PB-0001(Z), for direction on shifting 4.16KV Busses to Alternate Breaker Alignments.

CAUSE CORRE	CTIVE ACTION
1. Transformer trouble	1A. DISPATCH NEO to 1CX501 Transformer to determine cause of alarm IAW HC.OP-AR.NB-0001(Z).

REFERENCES: E-6741-0 E2-76(4)-8

ATTACHMENT D4

CONDITION	Loss of power to Annunciator Panel on Transformer	SETPOINT	N/A
INDICATION	N/A	ORIGIN	1CX501

AUTOMATIC ACTION:

Alarm only

OPERATOR ACTION:

RESTORE annunciator panel power.

CAUSE CORRE	CTIVE ACTION
1. Loss of panel power	1A. REQUEST NEO to determine cause of panel loss of power. 1B. REQUEST SM/CRS to initiate corrective action.

REFERENCES: E-6741-0 E2-76(4)-8

ATTACHMENT D5

WTR CHILLER
TRANSFORMER
1BX104 TRBL

Window Location E3-D5

OPERATOR ACTION:

DISPATCH NEO to 1BX104 Turbine Building Transformer for Water Chiller to determine cause of alarm.

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
N/A	Water Chiller Transformer 1BX104 Trouble	Alarm only

REFERENCES: E-6741-0

10855-E7-8, (1)-3

ATTACHMENT D5

CONDITION	Water Chiller Transformer SETPOINT 1BX104 Trouble	<u>200°C/210°C/220°C</u>
INDICATION	<u>N/A</u> ORIGIN	<u>1BX104</u>

AUTOMATIC ACTION:

Alarm only

OPERATOR ACTION:

DISPATCH NEO to 1BX104 Turbine Building Transformer for Water Chiller to determine cause of alarm.

CAUSE CORRE	CTIVE ACTION
1. Transformer excessive load or fault.	1A. START standby Chiller IAW HC.OP-SO.GB-0001(Q) Chilled Water System Operation. 1B. STOP BK111 Chiller IAW HC.OP-SO.GB-0001(Q). 1C. REQUEST SM/CRS to initiate corrective action.
2. Inadequate transformer ventilation	2A. CHECK transformer ventilation openings for blockage. 2B. CHECK Turbine Bldg. Vent operation IAW HC.OP-SO.GE-0001(Z) Turbine Bldg Ventilation Operation. 2C. REQUEST SM/CRS to initiate corrective action.

REFERENCES: E-6741-0 10855-E7-8, (1)-3

ATTACHMENT E2

4.16KV SYS
INCOMING
BRKR MALF

Window Location E3-E2

OPERATOR ACTION:

IF a 4.16KV Feeder Breaker has tripped,
ENSURE Alternate Feeder Breaker automatically closes.

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
D4555	4.16KV CKT A102/103/501 BRKR	Alarm or Breaker Trip
D4556	4.16KV CKT A101/104/502 BRKR	Alarm or Breaker Trip
D4557	4.16KV CKT A401 BRKR	Alarm only
D4558	4.16KV A402 CKT BRKR	Alarm or Breaker Trip
D4559	4.16KV BUS A403 CKT BRKR	Alarm or Breaker Trip
D4560	4.16KV BUS A404 CKT BRKR	Alarm or Breaker Trip

REFERENCES: E-3050-0, Sht. 1, Sht. 2, E-3400-0, Sht. 1,
 E-3060-0, Sht. 1,

**ATTACHMENT E2
TABLE 001**

1. NO LOP and/or LOCA exists
IF the following conditions exist:
 - A. Standby Diesel is NOT running AND
 - B. 4.16 KV Bus Power is available AND
 - C. Alternate Feed Breaker is closed AND
 - D. ELS (Emergency Load Sequencer) Initiated AND
 - E. Previously running loads stripped.
2. As a result of a slow transfer, a PSIS signal will be generated, therefore manually start the following loads from the Control Room as required by SM/CRS.
 - A. Service Water Pump
 - B. SACS Pump
 - C. RACS Pump (IF applicable)
 - D. TSC Chillers and Chilled Water Circ. Pumps (IF applicable)
 - E. Control Room Chillers and Chilled Water Circ. Pumps (IF applicable)
 - F. Applicable Drywell Coolers
 - G. CRD pump (IF applicable) (**NOTE 1**)
 - H. Emergency Instrument Air Compressor (IF applicable)(**NOTE 1**)
 - I. Radwaste Supply and Exhaust Fans (IF applicable)(**NOTE 1**)
3. **RESET** Initiated ELS (Emergency Load Sequencer) either manually (key), OR by Powering Down and Up (El. 130').
4. Following a slow transfer, **REQUEST** Maintenance to reset the ELS IAW Attachment E2-1.
5. The following loads will restart automatically upon resetting ELS, IF process signals (e.g. flows), are satisfied.
 - A. RBVS Supply and Exhaust Fans
 - B. SWGR Room Coolers
 - C. D.G. Room Recirc Fans
 - D. D.G. Panel Room Supply Fans
 - E. Control Room Supply Fans
 - F. Control Equip Room Supply Fans
 - G. CREF Fan
 - H. Control Area Battery Exhaust Fan
 - I. Control Room Return Air Fan
6. FRVS will trip on Undervoltage & will restart on process signal.
7. Class 1E unit substation Bkrs & MCC's fed from the 4.16 KV Class 1E busses will not trip. Class 1E powered non-1E loads which trip during this transfer are addressed in Step 2 above.
8. Should a LOCA signal initiate concurrent with this transfer, all automatic equipment operations, through the ELS, will occur as per design, without operator action.

NOTE

Trips on undervoltage, manual action is required to restore. NO PSIS for this.

ATTACHMENT E2-1
Page 1 of 1
EMERGENCY LOAD SEQUENCER RESET

1. **OBTAIN** the keys required to operate the following switches:
 - SEQUENCER TEST SWITCH _____
 - DG BREAKER CLOSED SIMULATE SWITCH _____
 - SEQUENCER RESET SWITCH _____
2. **UNLOCK** and **OPEN** the cabinet door on Panel 1A(B,C,D)C428 to gain access to the MTP. _____
3. **INSERT** the key into the SEQUENCER TEST SWITCH AND PLACE in the LOCA TEST position. _____
4. When the SEQUENCING COMPLETE light on the MTP illuminates, **PLACE** the SEQUENCER TEST SWITCH in the OFF position. _____
5. **INSERT** the key into the SEQUENCER RESET SWITCH and momentarily **PLACE** switch to RESET. _____
6. **PLACE** the SEQUENCER TEST SWITCH in the LOP TEST position. _____
7. **INSERT** the key into the DG BREAKER CLOSED SIMULATE SWITCH AND PLACE in the SIMULATE position. _____
8. When the SEQUENCING COMPLETE light on the MTP illuminates, **PLACE** the SEQUENCER TEST SWITCH in the OFF position. _____
9. **PLACE** the DG BREAKER CLOSED SIMULATE SWITCH to OFF. _____
10. Momentarily **PLACE** the SEQUENCER RESET SWITCH to RESET. _____
11. **VERIFY** all white lights on the MTP are extinguished. _____
12. **REMOVE** all keys. _____
13. **CLOSE** and **LOCK** the cabinet door on Panel 1A(B,C,D)C428. _____

ATTACHMENT E3

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
D4616	UNIT SUBSTA 10B440 FDR CKT BRKR	Alarm only
D4617	UNIT SUBSTA 10B490 FDR CKT BRKR	Alarm only
D4618	UNIT SUBSTA 10B120 FDR CKT BRKR	Alarm only
D4619	UNIT SUBSTA 10B130 FDR CKT BRKR	Alarm only
D4620	UNIT SUBSTA 10B140 FDR CKT BRKR	Alarm only
D4621	UNIT SUBSTA 10B250 FDR CKT BRKR	Alarm only
D4622	UNIT SUBSTA 10B260 FDR CKT BRKR	Alarm only
D4623	UNIT SUBSTA 10B110 FDR CKT BRKR	Alarm only
D4624	UNIT SUBSTA 00B170 FDR CKT BRKR	Alarm only
D4625	UNIT SUBSTA 00B180 FDR CKT BRKR	Alarm only
D4626	UNIT SUBSTA 00B500 FDR CKT BRKR	Alarm only
D4627	UNIT SUBSTA 00B590 FDR CKT BRKR	Alarm only

REFERENCES: E-3132-0 E-3133-0; Sht. 1
E-3134-0

ATTACHMENT F5

H2/O2
ANALYZER
TROUBLE

Window Location E3-F5

OPERATOR ACTION:

1. **CHECK** Containment Atmosphere Pnl on 10C650E to determine cause of alarm.
2. **ENSURE** compliance with operability requirements of T/S 3.6.3 Primary Containment Isolation Valves, 3.3.7.5 Accident Monitoring Instrumentation and 3.6.6.2 Drywell and Suppression Chamber Oxygen Concentration.

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
D4203	CONT ATM ANALYZER A H2	Alarm only
D4204	CONT ATM ANALYZER A O2	Alarm only
D4205	CONT ATM H2/O2 ANALYZER A UNIT	Alarm only
D4212	CONT ATM ANALYZER B H2	Alarm only
D4213	CONT ATM ANALYZER B O2	Alarm only
D4214	CONT ATM H2/O2 ANALYZER B UNIT	Alarm only
D4234	H2/O2 ANALYZER A HV-4955A OPF	Alarm only
D4235	H2/O2 ANALYZER A HV-5019A OPF	Alarm only
D4236	H2/O2 ANALYZER A HV-4959A OPF	Alarm only
D4237	H2/O2 ANALYZER A HV-4966A OPF	Alarm only

REFERENCES: J-57-0; Sht. 10; Sht. 18

ATTACHMENT F5

INPUTS

Digital Point/ Indication	Nomenclature/Condition Automatic	Action
D4238	H2/O2 ANALYZER A H2 SPLY OPF	Alarm only
D4243	H2/O2 ANALYZER B HV-4955B OPF	Alarm only
D4244	H2/O2 ANALYZER B HV-5019B OPF	Alarm only
D4245	H2/O2 ANALYZER B HV-4959B OPF	Alarm only
D4246	H2/O2 ANALYZER B HV-4966B OPF	Alarm only
D4247	H2/O2 ANALYZER H2 SPLY OPF	Alarm only
D4248	H2/O2 ANALYZER A HV-4983A OPF	Alarm only
D4249	H2/O2 ANALYZER A HV-4984A OPF	Alarm only
D4250	H2/O2 ANALYZER A HV-4965A OPF	Alarm only
D4251	H2/O2 ANALYZER A HV-5022A OPF	Alarm only
D4252	H2/O2 ANALYZER B HV-4983B OPF	Alarm only
D4253	H2/O2 ANALYZER B HV-4984B OPF	Alarm only
D4254	H2/O2 ANALYZER B HV-4965B OPF	Alarm only
D4255	H2/O2 ANALYZER B HV-5022B OPF	Alarm only