

Effective Date 10-1-98

INFORMATION ONLY

Holder # 1242

ANNUNCIATOR RESPONSE

AR-503

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

ICS K ANNUNCIATOR RESPONSE

O/1
A045

APPROVED BY: Procedure Owner
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(SIGNATURE ON FILE)

070048

DATE: 9/28/98

PROCEDURE OWNER: Manager, Nuclear Plant Operations Support

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1.0 PURPOSE

- 1.1 Establish a reference document for each Annunciator Window on the ICS-CY3 Lampbox.
- 1.2 Establish operator actions for valid Annunciator alarms on the ICS-CY3 Lampbox.
- 1.3 Establish a reference to other procedures which address operator actions for valid Annunciator alarms on the ICS-CY3 Lampbox.

2.0 REFERENCES

2.1 IMPLEMENTING REFERENCES

- 2.1.1 EOP, Emergency Operating Procedure
- 2.1.2 AP-581 - Loss of NNI-X
- 2.1.3 AP-582 - Loss of NNI-Y
- 2.1.4 OP-501 - Reactor Non Nuclear Instrumentation
- 2.1.5 OP-504 - Integrated Control System
- 2.1.6 OP-605 - Feedwater System
- 2.1.7 AP-545 - Plant Runback
- 2.1.8 OP-608 - OTSGs and Main Steam System
- 2.1.9 OP-209 - Plant Cooldown

2.2 DEVELOPMENTAL REFERENCES

- 2.2.1 INPO 90-021, Good Practice OP-217, Alarm Response Procedures
- 2.2.2 Annunciator Window Engraving Drawing E-224-049

3.0 PERSONNEL INDOCTRINATION

- 3.1 The Annunciator System is powered from VBDP-5 Breaker 28.

4.0 INSTRUCTIONS

4.1 Respond to alarms on the ICS-CY3 Lampbox as indicated on Enclosure 1, Annunciator Response.

5.0 FOLLOW-UP ACTIONS

None

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-01-01	K-01-01
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NNI X
POWER
FAILURE

EVENT POINT 1143

INDICATED CONDITION:

- o NNI-X 24V DC BUS POWER FAILURE.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o NNI-X POWER LIGHT IS OFF, LOCATED ON THE REDUNDANT INSTRUMENT PANEL.
- o NNI-X POWER SUPPLY MONITOR HAS NO INDICATING LIGHTS ON, LOCATED IN NNI CABINET 3.
- o S-1 AND S-2 SWITCHES ARE TRIPPED OFF, LOCATED IN NNI CABINET 2.

OPERATOR ACTIONS FOR A VALID ALARM:

- o REFER TO AP-581.
- o REFER TO OP-501 FOR RE-ENERGIZING NNI-X DC POWER SUPPLIES.

DISCUSSION:

REDUNDANT POWER SOURCES TO NNI-X DC POWER SUPPLIES IS VBDP-1 BKR 8 AND VBDP-5 BKR.25.

A LOSS OF A POSITIVE OR NEGATIVE BUS SHOULD TRIP BOTH S-1 AND S-2.

REFERENCES: NNI DRAWINGS

SENSING ELEMENT: VARIOUS NNI CONTACTS.

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-01-01	K-01-01
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NNI X
POWER
FAILURE

EVENT POINT 1144

INDICATED CONDITION: <ul style="list-style-type: none">o NNI-X 120V AC BUS FAILURE.
REDUNDANT INDICATION WHICH WILL VERIFY ALARM: <ul style="list-style-type: none">o NNI-X POWER LIGHT IS OFF, LOCATED ON THE REDUNDANT INSTRUMENT PANEL.
OPERATOR ACTIONS FOR A VALID ALARM: <ul style="list-style-type: none">o REFER TO AP-581.o REFER TO OP-501 FOR RE-ENERGIZING NNI-X AC BUS.
DISCUSSION: REDUNDANT POWER SOURCES TO NNI-X AC BUS IS VBDP-1 BKR 11 AND VBDP-5 BKR 7. THIS ALARM INDICATES A LOSS OF 120V AC FIELD LOADS HAS OCCURRED.
REFERENCES: NNI DRAWINGS
SENSING ELEMENT: VARIOUS NNI CONTACTS.

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-01-03	K-01-03
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TRANSMITTER
POWER SUPPLY
ON BACKUP

EVENT POINT 0933

<p>INDICATED CONDITION:</p> <ul style="list-style-type: none">o TRANSMITTER POWER SUPPLY CABINET "A" PRIMARY POWER SELECTOR SWITCH IS IN "AUTO" AND STANDBY POWER SELECTOR SWITCH IS IN "STANDBY" AND PRIMARY POWER IS LOST.
<p>REDUNDANT INDICATION WHICH WILL VERIFY ALARM:</p> <ul style="list-style-type: none">o RED STANDBY POWER ON LIGHT ON TRANSMITTER POWER SUPPLY CABINET LOCATED IN THE CRD ROOM IS ON.
<p>OPERATOR ACTIONS FOR A VALID ALARM:</p> <ul style="list-style-type: none">o STABILIZE ANY PLANT TRANSIENT THAT MAY RESULT FROM A TRANSMITTER POWER FAILURE.o CONTACT ELECTRIC SHOP.o VERIFY VBDP-1 BREAKER 1 IS ON.
<p>DISCUSSION:</p> <p>THE TRANSMITTER POWER SUPPLY CABINET IN THE CRD ROOM PROVIDES POWER TO OVER 50 NON-VITAL TRANSMITTERS IN THE PLANT. NORMAL POWER SUPPLY TO THE "A" CABINET IS VBDP-1 BKR-1 WITH A BACKUP FROM VBDP-5 BKR-11. A POWER SEEKING ABT IS INSTALLED TO SELECT ONE OF THESE POWER SOURCES. TO RESTORE NORMAL SYSTEM LINEUP AFTER A TRANSFER HAS OCCURRED THE STANDBY POWER SWITCH MUST BE PLACED IN RESET THEN BACK TO STANDBY AFTER NORMAL POWER HAS BEEN RECOVERED.</p>
<p>REFERENCES: DRAWING EC-210-586</p>
<p>SENSING ELEMENT: POWER AVAILABLE RELAY</p>

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-01-05	K-01-05
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CNTRL TRANSFER
TO
REMOTE S/D PNL

EVENT POINT 2039

<p>INDICATED CONDITION:</p> <ul style="list-style-type: none"> o "NON-SAFETY" REMOTE SHUTDOWN TRANSFER SWITCH IS IN RSP POSITION, LOCATED ON REMOTE SHUTDOWN PANEL.
<p>REDUNDANT INDICATION WHICH WILL VERIFY ALARM:</p> <ul style="list-style-type: none"> o RED TRANSFER INDICATOR LIGHT IS ON, LOCATED ON RSP.
<p>OPERATOR ACTIONS FOR A VALID ALARM:</p> <ul style="list-style-type: none"> o REPOSITION SWITCH AS NECESSARY.
<p>DISCUSSION:</p> <p>THIS ALARM INDICATES THAT CONTROL OF "NON-SAFETY" COMPONENTS HAS BEEN REMOVED FROM THE CONTROL ROOM. CONTROL SHOULD BE REGAINED FROM THE CONTROL ROOM OR THE REMOTE SHUTDOWN PANEL SHOULD BE MANNED.</p>
<p>REFERENCES: DRAWING 208-082 SHEET RS-09</p>
<p>SENSING ELEMENT: CS-ISNS</p>

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-02-01	K-02-01
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NNI Y
POWER
FAILURE

EVENT POINT 1145

<p>INDICATED CONDITION:</p> <ul style="list-style-type: none">o NNI-Y 24V DC BUS POWER FAILURE.
<p>REDUNDANT INDICATION WHICH WILL VERIFY ALARM:</p> <ul style="list-style-type: none">o NNI-Y POWER LIGHT IS OFF, LOCATED ON THE REDUNDANT INSTRUMENT PANEL.o NNI-Y POWER SUPPLY MONITOR HAS NO INDICATING LIGHTS ON, LOCATED IN NNI CABINET 7.o S-1 AND S-2 SWITCHES ARE TRIPPED OFF, LOCATED IN NNI CABINET 8.
<p>OPERATOR ACTIONS FOR A VALID ALARM:</p> <ul style="list-style-type: none">o REFER TO AP-582.o REFER TO OP-501 FOR RE-ENERGIZING NNI-Y DC POWER SUPPLIES.
<p>DISCUSSION:</p> <p>REDUNDANT POWER SOURCES TO NNI-Y DC POWER SUPPLIES ARE VBDP-6 BKR 25 AND VBDP-7 BKR 18.</p> <p>A LOSS OF A POSITIVE OR NEGATIVE BUS SHOULD TRIP BOTH S-1 AND S-2.</p>
<p>REFERENCES: NNI DRAWINGS</p>
<p>SENSING ELEMENT: VARIOUS NNI CONTACTS.</p>

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-02-02	K-02-02
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ICS
NNI
TROUBLE

EVENT POINT 0778

<p>INDICATED CONDITION:</p> <ul style="list-style-type: none">o POSITIVE 24V NNI-Y POWER SUPPLY FAILURE.
<p>REDUNDANT INDICATION WHICH WILL VERIFY ALARM:</p> <ul style="list-style-type: none">o POSITIVE WHITE "SUPPLY" INDICATOR LIGHT IS OFF, LOCATED ON THE NNI-Y POWER SUPPLY MONITOR IN NNI CABINET 7.o + 24 V NNI-Y POWER SUPPLY INDICATES NO AMPS OR VOLTAGE.
<p>OPERATOR ACTIONS FOR A VALID ALARM:</p> <ul style="list-style-type: none">o ENSURE PLANT STABLE.o CONTACT I&C SHOP.
<p>DISCUSSION:</p> <p>THIS ALARM INDICATES ONE OF TWO REDUNDANT POWER SUPPLIES TO NNI-Y +24V BUS HAS BEEN LOST. THIS CONDITION SHOULD NOT EFFECT NNI BUS POWER.</p>
<p>REFERENCES: DRAWING NNI DRAWINGS</p>
<p>SENSING ELEMENT: VARIOUS NNI CONTACTS.</p>

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-02-02	K-02-02
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ICS
NNI
TROUBLE

EVENT POINT 1113

INDICATED CONDITION:

- o NEGATIVE 24V ICS POWER SUPPLY FAILURE.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o NEGATIVE WHITE "SUPPLY" INDICATOR LIGHT IS OFF, LOCATED ON THE ICS POWER SUPPLY MONITOR IN ICS CABINET 2.
- o - 24 V ICS POWER SUPPLY INDICATES NO AMPS OR VOLTAGE.

OPERATOR ACTIONS FOR A VALID ALARM:

- o ENSURE PLANT STABLE.
- o CONTACT I&C SHOP.

DISCUSSION:

THIS ALARM INDICATES ONE OF TWO REDUNDANT POWER SUPPLIES TO ICS -24V BUS HAS BEEN LOST. THIS CONDITION SHOULD NOT EFFECT ICS POWER.

REFERENCES: NNI DRAWINGS

SENSING ELEMENT: VARIOUS NNI CONTACTS.

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-02-02	K-02-02
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ICS
NNI
TROUBLE

EVENT POINT 1147

INDICATED CONDITION:

- o POSITIVE 24V NNI-X POWER SUPPLY FAILURE.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o POSITIVE WHITE "SUPPLY" INDICATOR LIGHT IS OFF, LOCATED ON THE NNI-X POWER SUPPLY MONITOR IN NNI CABINET 3.
- o +24 V NNI-X POWER SUPPLY INDICATES NO AMPS OR VOLTAGE.

OPERATOR ACTIONS FOR A VALID ALARM:

- o ENSURE PLANT STABLE.
- o NOTIFY THE I&C SHOP.

DISCUSSION:

THIS ALARM INDICATES ONE OF TWO REDUNDANT POWER SUPPLIES TO NNI-X +24V BUS HAS BEEN LOST. THIS CONDITION SHOULD NOT EFFECT NNI BUS POWER.

REFERENCES: DRAWING NNI DRAWINGS

SENSING ELEMENT: VARIOUS NNI CONTACTS.

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-02-02	K-02-02
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ICS
NNI
TROUBLE

EVENT POINT 1148

INDICATED CONDITION:

- o NEGATIVE 24V NNI-X POWER SUPPLY FAILURE.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o NEGATIVE WHITE "SUPPLY" INDICATOR LIGHT IS OFF, LOCATED ON THE NNI-X POWER SUPPLY MONITOR IN NNI-X CABINET 3.
- o - 24 V NNI-X POWER SUPPLY INDICATES NO AMPS OR VOLTAGE.

OPERATOR ACTIONS FOR A VALID ALARM:

- o ENSURE PLANT STABLE.
- o CONTACT I&C SHOP.

DISCUSSION:

THIS ALARM INDICATES ONE OF TWO REDUNDANT POWER SUPPLIES TO NNI-X -24V BUS HAS BEEN LOST. THIS CONDITION SHOULD NOT EFFECT NNI BUS POWER.

REFERENCES: DRAWING NNI DRAWINGS

SENSING ELEMENT: VARIOUS NNI CONTACTS.

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-02-02	K-02-02
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ICS
NNI
TROUBLE

EVENT POINT 1149

INDICATED CONDITION:

- o NNI-X CABINET FAN FAILURE.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o NNI-X CABINET COOLING FANS NOT RUNNING.
- o NNI-X CABINET FILTERS DIRTY.

OPERATOR ACTIONS FOR A VALID ALARM:

- o HAVE I&C SHOP CHANGE FILTERS.

DISCUSSION:

CONSIDERATION SHOULD BE GIVEN TO OPENING BOTH FRONT AND BACK DOORS ON THE NNI CABINETS TO PROVIDE COOLING WHILE FANS ARE NOT OPERABLE. HOWEVER, WITH THE REDUCED SHIELDING OF THE OPEN DOOR, RADIO FREQUENCY INTERFERENCE CAN POTENTIALLY CAUSE UNDESIRABLE AND UNPREDICTABLE EFFECTS ON THE SYSTEM OPERATION.

REFERENCES: NNI DRAWINGS

SENSING ELEMENT: VARIOUS NNI CONTACTS.

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-02-02	K-02-02
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ICS
 NNI
 TROUBLE

EVENT POINT 1150

<p>INDICATED CONDITION:</p> <ul style="list-style-type: none"> o NNI-Y CABINET FAN FAILURE.
<p>REDUNDANT INDICATION WHICH WILL VERIFY ALARM:</p> <ul style="list-style-type: none"> o NNI-Y CABINET COOLING FANS NOT RUNNING. o NNI-Y CABINET FILTERS DIRTY.
<p>OPERATOR ACTIONS FOR A VALID ALARM:</p> <ul style="list-style-type: none"> o HAVE I&C SHOP CHANGE FILTERS.
<p>DISCUSSION:</p> <p>CONSIDERATION SHOULD BE GIVEN TO OPENING BOTH FRONT AND BACK DOORS ON THE NNI CABINETS TO PROVIDE COOLING WHILE FANS ARE NOT OPERABLE. HOWEVER, WITH THE REDUCED SHIELDING OF THE OPEN DOOR, RADIO FREQUENCY INTERFERENCE CAN POTENTIALLY CAUSE UNDESIRABLE AND UNPREDICTABLE EFFECTS ON THE SYSTEM OPERATION.</p>
<p>REFERENCES: NNI DRAWINGS</p>
<p>SENSING ELEMENT: VARIOUS NNI CONTACTS.</p>

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-02-02	K-02-02
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ICS
NNI
TROUBLE

EVENT POINT 1744

<p>INDICATED CONDITION:</p> <ul style="list-style-type: none"> o NNI-Y 120V AC FIELD LOADS TRANSFERRED FROM VBDP-6 TO VBDP-7.
<p>REDUNDANT INDICATION WHICH WILL VERIFY ALARM:</p> <ul style="list-style-type: none"> o NORMAL FEEDER TO NNI-Y FROM VBDP-6 SWITCH 10 IS OPEN. o NNI-Y FEEDER RED STATUS LIGHT IS OFF, LOCATED ON VBDP-6 CIRCUIT STATUS PANEL.
<p>OPERATOR ACTIONS FOR A VALID ALARM:</p> <ul style="list-style-type: none"> o ENSURE PLANT STABLE. o CONTACT I&C SHOP.
<p>DISCUSSION:</p> <p>THIS ALARM INDICATES AN AUTOMATIC BUS TRANSFER DEVICE HAS ACTUATED THAT SWAPS FROM THE NORMAL POWER SUPPLY TO THE ALTERNATE POWER SUPPLY FOR NNI-Y 120V AC FIELD LOADS.</p> <p>ONCE NORMAL POWER IS REGAINED THE ABT WILL TRANSFER BACK TO NORMAL SUPPLY AFTER 45 SECONDS.</p>
<p>REFERENCES: NNI DRAWINGS</p>
<p>SENSING ELEMENT: VARIOUS NNI CONTACTS.</p>

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-02-03	K-02-03
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ICS/NNI
FUSE
BLOWN

EVENT POINT 1107

<p>INDICATED CONDITION:</p> <ul style="list-style-type: none">o ICS FUSE BLOWN, LOCATED IN ICS CABINET 1 FUSE PANEL.
<p>REDUNDANT INDICATION WHICH WILL VERIFY ALARM:</p> <ul style="list-style-type: none">o FUSE PANEL LOCATED IN ICS CABINET 1 AMBER FUSE BLOWN INDICATION.
<p>OPERATOR ACTIONS FOR A VALID ALARM:</p> <ul style="list-style-type: none">o ENSURE PLANT STABLE.o REFER TO OP-504 FOR FUSE INFORMATION.o CONTACT I&C SHOP.
<p>DISCUSSION:</p> <p>THIS ALARM INDICATES A FUSE IS BLOWN THAT FEEDS ICS COMPONENTS.</p> <p>OP-504 WILL HELP DETERMINE EQUIPMENT EFFECTED.</p>
<p>REFERENCES: NNI DRAWINGS</p>
<p>SENSING ELEMENT: FUSE INDICATION RELAY</p>

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-02-03	K-02-03
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ICS/NNI
FUSE
BLOWN

EVENT POINT 1137

<p>INDICATED CONDITION:</p> <ul style="list-style-type: none">o NNI-X FUSE IS BLOWN, LOCATED IN NNI CABINET 2 FUSE PANEL.
<p>REDUNDANT INDICATION WHICH WILL VERIFY ALARM:</p> <ul style="list-style-type: none">o FUSE PANEL LOCATED IN THE BACK OF NNI CABINET 2 AMBER FUSE BLOWN INDICATION.
<p>OPERATOR ACTIONS FOR A VALID ALARM:</p> <ul style="list-style-type: none">o ENSURE PLANT STABLE.o CONTACT I&C SHOP.
<p>DISCUSSION:</p> <p>THIS ALARM INDICATES A FUSE IS BLOWN THAT FEEDS NNI-X COMPONENTS. OP-501 WILL HELP DETERMINE EQUIPMENT EFFECTED.</p>
<p>REFERENCES: NNI DRAWINGS</p>
<p>SENSING ELEMENT: FUSE INDICATION RELAY</p>

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-02-03	K-02-03
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ICS/NNI
FUSE
BLOWN

EVENT POINT 1138

<p>INDICATED CONDITION:</p> <ul style="list-style-type: none">o NNI-X FUSE IS BLOWN, LOCATED IN NNI CABINET 4 FUSE PANEL.
<p>REDUNDANT INDICATION WHICH WILL VERIFY ALARM:</p> <ul style="list-style-type: none">o FUSE PANEL LOCATED IN THE BACK OF NNI CABINET 4 AMBER FUSE BLOWN INDICATION.
<p>OPERATOR ACTIONS FOR A VALID ALARM:</p> <ul style="list-style-type: none">o ENSURE PLANT STABLE.o CONTACT I&C SHOP.
<p>DISCUSSION:</p> <p>THIS ALARM INDICATES A FUSE IS BLOWN THAT FEEDS NNI-X COMPONENTS. OP-501 WILL HELP DETERMINE EQUIPMENT EFFECTED.</p>
<p>REFERENCES: NNI DRAWINGS</p>
<p>SENSING ELEMENT: FUSE INDICATION RELAY</p>

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-02-03	K-02-03
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ICS/NNI
FUSE
BLOWN

EVENT POINT 1139

INDICATED CONDITION:

- o NNI-X FUSE IS BLOWN, LOCATED IN NNI CABINET 1 FUSE PANEL.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o FUSE PANEL LOCATED IN THE FRONT OF NNI CABINET 1 AMBER FUSE BLOWN INDICATION.

OPERATOR ACTIONS FOR A VALID ALARM:

- o ENSURE PLANT STABLE.
- o CONTACT I&C SHOP.

DISCUSSION:

THIS ALARM INDICATES A FUSE IS BLOWN THAT FEEDS NNI-X COMPONENTS. OP-501 WILL HELP DETERMINE EQUIPMENT EFFECTED.

REFERENCES: NNI DRAWINGS

SENSING ELEMENT: FUSE INDICATION RELAY

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-02-03	K-02-03
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ICS/NNI
FUSE
BLOWN

EVENT POINT 1142

<p>INDICATED CONDITION:</p> <ul style="list-style-type: none">o NNI-Y FUSE IS BLOWN, LOCATED IN NNI CABINET 8 FUSE PANEL.
<p>REDUNDANT INDICATION WHICH WILL VERIFY ALARM:</p> <ul style="list-style-type: none">o FUSE PANEL LOCATED IN THE BACK OF NNI CABINET 8 AMBER FUSE BLOWN INDICATION.
<p>OPERATOR ACTIONS FOR A VALID ALARM:</p> <ul style="list-style-type: none">o ENSURE PLANT STABLE.o CONTACT I&C SHOP.
<p>DISCUSSION:</p> <p>THIS ALARM INDICATES A FUSE IS BLOWN THAT FEEDS NNI-Y COMPONENTS. OP-501 WILL HELP DETERMINE EQUIPMENT EFFECTED.</p>
<p>REFERENCES: NNI DRAWINGS</p>
<p>SENSING ELEMENT: FUSE INDICATION RELAY</p>

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-03-01	K-03-01
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ICS POWER
FAILURE

EVENT POINT 1115

INDICATED CONDITION:

- o ICS 24V DC BUS POWER FAILURE.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o ICS POWER LIGHT IS OFF, LOCATED ON THE REDUNDANT INSTRUMENT PANEL.
- o ICS POWER SUPPLY MONITOR, LOCATED IN ICS CABINET 2, HAS NO INDICATING LIGHTS ON.
- o S-1 AND S-2 SWITCHES ARE TRIPPED OFF, LOCATED IN ICS CABINET 2.

OPERATOR ACTIONS FOR A VALID ALARM:

- o TRIP BOTH MAIN FEED PUMPS.
- o REFER TO EOP-02.
- o REFER TO OP-504 FOR RE-ENERGIZING NNI POWER SUPPLIES.

DISCUSSION:

POWER SUPPLY TO ICS DC BUSES IS, VBDP-4 BKR.23 AND VBDP-2 BKR.3.
A LOSS OF A POSITIVE OR NEGATIVE BUSS SHOULD TRIP BOTH S-1 AND S-2.

REFERENCES: NNI DRAWINGS

SENSING ELEMENT: VARIOUS NNI CONTACTS.

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-03-01	K-03-01
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ICS POWER FAILURE

EVENT POINT 1117

INDICATED CONDITION: <ul style="list-style-type: none">o ICS 120V AC BUS POWER FAILURE.
REDUNDANT INDICATION WHICH WILL VERIFY ALARM: <ul style="list-style-type: none">o ICS POWER LIGHT IS OFF, LOCATED ON REDUNDANT INSTRUMENT PANEL.
OPERATOR ACTIONS FOR A VALID ALARM: <ul style="list-style-type: none">o TRIP BOTH MAIN FEED PUMPS.o REFER TO EOP-02.
DISCUSSION: <p>POWER SUPPLY TO ICS AC BUS IS, VBDP-4 BKR 25 AND VBDP-2 BKR 4.</p>
REFERENCES: NNI DRAWINGS
SENSING ELEMENT: VARIOUS NNI CONTACTS.

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-03-02	K-03-02
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SASS
MISMATCH

EVENT POINT 0084

INDICATED CONDITION:

- o RCS LOOP "A" Th INPUTS TO SASS MISMATCHED BY >3°F.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o Th TEMPERATURE INDICATOR, RC-4A-TI1.
- o Th COMPUTER POINT, R-212.

OPERATOR ACTIONS FOR A VALID ALARM:

- o REFER TO OP-501

DISCUSSION:

THE NORMAL SASS SIGNAL SOURCE FOR Th LOOP "A" IS THE SELECTED TRANSMITTER ON RC-4A-MS.

RCS Th SELECTOR SWITCH, RC-4A-MS WILL SELECT THE INPUT TO THE CONTROL BOARD INDICATOR. THE NON-SELECTED INPUT GOES TO THE COMPUTER POINT.

REFERENCES: NNI DRAWINGS

SENSING ELEMENT: VARIOUS NNI CONTACTS

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-03-02	K-03-02
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SASS
MISMATCH

EVENT POINT 0262

INDICATED CONDITION: <ul style="list-style-type: none">o LOOP "A" FEEDWATER FLOW INPUTS TO SASS MISMATCHED BY >.18 MILLION LBM/HR.
REDUNDANT INDICATION WHICH WILL VERIFY ALARM: <ul style="list-style-type: none">o LOOP "A" FEEDWATER FLOW INDICATOR, SP-8A-FIR1.o LOOP "A" FEEDWATER FLOW COMPUTER POINT, S-301.
OPERATOR ACTIONS FOR A VALID ALARM: <ul style="list-style-type: none">o REFER TO OP-501
DISCUSSION: <p>THE NORMAL SASS SIGNAL SOURCE FOR LOOP "A" FEEDWATER FLOW IS THE SELECTED TRANSMITTER ON SP-8A-MS.</p> <p>LOOP "A" FEEDWATER FLOW SELECTOR SWITCH, SP-8A WILL SELECT THE INPUT TO THE CONTROL BOARD INDICATOR. THE NON-SELECTED INPUT GOES TO THE COMPUTER POINT.</p>
REFERENCES: NNI DRAWINGS
SENSING ELEMENT: VARIOUS NNI CONTACTS

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-03-02	K-03-02
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SASS
MISMATCH

EVENT POINT 0783

INDICATED CONDITION:

- o ΔT_c INPUTS TO SASS MISMATCHED BY $>0.6^\circ\text{F}$.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o ΔT_c INDICATOR RC-8-DT1.
- o DIFFERENCE BETWEEN RC-5A-TI2 AND RC-5B-TI2.

OPERATOR ACTIONS FOR A VALID ALARM:

- o REFER TO OP-501

DISCUSSION:

THE NORMAL SASS SIGNAL SOURCE FOR ΔT_c IS NNI-X OR NNI-Y SELECTED IN NNI CABINET 5.

THE ΔT_c CONTROL BOARD INDICATOR, RC-8-DT1 INDICATES THE INPUT SELECTED IN THE NNI CABINET.

REFERENCES: NNI DRAWINGS

SENSING ELEMENT: VARIOUS NNI CONTACTS

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-03-02	K-03-02
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SASS
MISMATCH

EVENT POINT 0784

<p>INDICATED CONDITION:</p> <ul style="list-style-type: none">o RCS NARROW RANGE PRESSURE INPUTS TO SASS MISMATCHED BY >24 PSIG.
<p>REDUNDANT INDICATION WHICH WILL VERIFY ALARM:</p> <ul style="list-style-type: none">o RCS PRESSURE RECORDER, RC-3A-PIR1.o RCS PRESSURE RECORDER, RC-3A PIR2.
<p>OPERATOR ACTIONS FOR A VALID ALARM:</p> <ul style="list-style-type: none">o REFER TO OP-501
<p>DISCUSSION:</p> <p>THE NORMAL SASS SIGNAL SOURCE FOR RCS PRESSURE IS, RPS-A OR RPS-B SELECTED IN NNI CABINET 3.</p>
<p>REFERENCES: NNI DRAWINGS</p>
<p>SENSING ELEMENT: VARIOUS NNI CONTACTS</p>

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-03-02	K-03-02
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SASS
MISMATCH

EVENT POINT 0786

<p>INDICATED CONDITION:</p> <ul style="list-style-type: none">o RCS LOOP "B" Th INPUTS TO SASS MISMATCHED BY >3°F.
<p>REDUNDANT INDICATION WHICH WILL VERIFY ALARM:</p> <ul style="list-style-type: none">o Th TEMPERATURE INDICATOR, RC-4B-TI1o Th COMPUTER POINT, R-213
<p>OPERATOR ACTIONS FOR A VALID ALARM:</p> <ul style="list-style-type: none">o REFER TO OP-501
<p>DISCUSSION:</p> <p>THE NORMAL SASS SIGNAL SOURCE FOR Th LOOP "B" IS THE TRANSMITTER SELECTED ON RC-4B-MS.</p> <p>RCS Th SELECTOR SWITCH, RC-4B-MS WILL SELECT THE INPUT TO THE CONTROL BOARD INDICATOR. THE NON-SELECTED INPUT GOES TO THE COMPUTER POINT.</p>
<p>REFERENCES: NNI DRAWINGS</p>
<p>SENSING ELEMENT: VARIOUS NNI CONTACTS</p>

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-03-02	K-03-02
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SASS
MISMATCH

EVENT POINT 0796

INDICATED CONDITION:

- o STEAM GENERATOR "B" OPERATE LEVEL INPUTS TO SASS MISMATCHED BY >8.8".

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o OTSG "B" OPERATE LEVEL INDICATOR, SP-1B-LIR1.
- o OTSG "B" OPERATE LEVEL COMPUTER POINT, S-291.

OPERATOR ACTIONS FOR A VALID ALARM:

- o REFER TO OP-501

DISCUSSION:

THE NORMAL SASS SIGNAL SOURCE FOR OTSG "B" OPERATE LEVEL IS THE TRANSMITTER SELECTED ON SP-1B-MS1.

OTSG "B" OPERATE LEVEL SELECTOR SWITCH, SP-1B-MS1 WILL SELECT THE INPUT TO THE CONTROL BOARD INDICATOR. THE NON-SELECTED INPUT GOES TO THE COMPUTER POINT.

REFERENCES: NNI DRAWINGS

SENSING ELEMENT: VARIOUS NNI CONTACTS

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-03-02	K-03-02
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SASS
MISMATCH

EVENT POINT 0806

INDICATED CONDITION: <ul style="list-style-type: none">o LOOP "B" FEEDWATER Δ P INPUTS TO SASS MISMATCHED BY >3 PSID.
REDUNDANT INDICATION WHICH WILL VERIFY ALARM: <ul style="list-style-type: none">o LOOP "B" FEEDWATER Δ P COMPUTER POINT A-302.o LOOP "B" FEEDWATER Δ P COMPUTER POINT A-303.
OPERATOR ACTIONS FOR A VALID ALARM: <ul style="list-style-type: none">o REFER TO OP-501
DISCUSSION: <p>THE NORMAL SASS SIGNAL SOURCE FOR LOOP "B" FEEDWATER Δ P IS THE TRANSMITTER SELECTED IN NNI CABINET 5.</p>
REFERENCES: NNI DRAWINGS
SENSING ELEMENT: VARIOUS NNI CONTACTS

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-03-02	K-03-02
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SASS
MISMATCH

EVENT POINT 0845

INDICATED CONDITION:

- o GENERATED MEGAWATTS INPUT TO SASS MISMATCHED BY >30 MEGAWATTS.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o GENERATED MEGAWATTS COMPUTER POINT, E-210.
- o GENERATED MEGAWATTS COMPUTER POINT, E-211.

OPERATOR ACTIONS FOR A VALID ALARM:

- o REFER TO OP-501

DISCUSSION:

THE NORMAL SASS SIGNAL SOURCE FOR GENERATED MEGAWATTS IS THE TRANSMITTER SELECTED IN ICS CABINET 4.

REFERENCES: NNI DRAWINGS

SENSING ELEMENT: VARIOUS NNI CONTACTS

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-03-02	K-03-02
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SASS
MISMATCH!

EVENT POINT 0846

INDICATED CONDITION:

- o TOTAL CONDENSATE FLOW INPUT TO SASS MISMATCHED BY >0.3 MILLION LBM/HR.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o TOTAL CONDENSATE FLOW RECORDER CD-15-FIR.
- o TOTAL CONDENSATE FLOW COMPUTER POINT, A-304.

OPERATOR ACTIONS FOR A VALID ALARM:

- o REFER TO OP-501

DISCUSSION:

THE NORMAL SASS SIGNAL SOURCE FOR TOTAL CONDENSATE FLOW IS THE TRANSMITTER SELECTED IN NNI CABINET 7.

REFERENCES: NNI DRAWINGS

SENSING ELEMENT: VARIOUS NNI CONTACTS

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-03-02	K-03-02
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SASS
MISMATCH

EVENT POINT 0847

<p>INDICATED CONDITION:</p> <ul style="list-style-type: none">o DEAERATOR TANK LEVEL INPUT TO SASS MISMATCHED BY >0.42 FEET.
<p>REDUNDANT INDICATION WHICH WILL VERIFY ALARM:</p> <ul style="list-style-type: none">o DEAERATOR TANK LEVEL RECORDER CD-61-LIR.o DEAERATOR TANK LEVEL COMPUTER POINT, S-240.
<p>OPERATOR ACTIONS FOR A VALID ALARM:</p> <ul style="list-style-type: none">o REFER TO OP-501
<p>DISCUSSION:</p> <p>THE NORMAL SASS SIGNAL SOURCE FOR DEAERATOR TANK LEVEL IS THE TRANSMITTER SELECTED IN NNI CABINET 7.</p> <p>DEAERATOR LEVEL INPUT SELECTOR LOCATED IN NNI CABINET 7 WILL SELECT THE INPUT TO THE CONTROL BOARD RECORDER, CD-61-LIR, THE NON-SELECTED INPUT GOES TO THE COMPUTER POINT.</p>
<p>REFERENCES: NNI DRAWINGS</p>
<p>SENSING ELEMENT: VARIOUS NNI CONTACTS</p>

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-03-03	K-03-03
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SASS
TRANSFER

EVENT POINT 0776

INDICATED CONDITION:

- o SASS HAS AUTO SELECTED EITHER "A" OR "B" INPUT.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o RED SASS TRIPPED INDICATION ON FAILED SASS MODULE.
- o SASS MISMATCH ALARM.

OPERATOR ACTIONS FOR A VALID ALARM:

- o ENSURE PLANT STABLE.
- o REFER TO OP-501.

DISCUSSION:

THIS ALARM DOES NOT NECESSARILY INDICATE THAT THE SASS SYSTEM HAS TRANSFERRED INPUTS TO A CONTROLLING MODULE. IT ONLY INDICATES THAT ONE INPUT THAT FEEDS THAT SASS MODULE HAS FAILED.

REFERENCES: NNI DRAWINGS

SENSING ELEMENT: VARIOUS SASS NNI CONTACTS

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-05-01	K-05-01
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LOSS OF RC PP
RUNBACK

EVENT POINT 1124

<p>INDICATED CONDITION:</p> <ul style="list-style-type: none"> o UNIT LOAD DEMAND >75% DEMAND AND <4 RC PUMPS OPERATING. o UNIT LOAD DEMAND >100% DEMAND AND 4 RC PUMPS OPERATING.
<p>REDUNDANT INDICATION WHICH WILL VERIFY ALARM:</p> <ul style="list-style-type: none"> o PLANT IS RUNNING BACK TO 75% DEMAND AT A RATE OF 50% PER MINUTE. o RC PUMP TRIPS.
<p>OPERATOR ACTIONS FOR A VALID ALARM:</p> <ul style="list-style-type: none"> o REFER TO AP-545.
<p>DISCUSSION:</p> <p>ICS USES RCP BREAKER POSITION TO DETERMINE REACTOR COOLANT PUMP STATUS.</p>
<p>REFERENCES: ICS DIGITAL AND ANALOG DRAWINGS</p>
<p>SENSING ELEMENT: ICS MODULE 2-9-11</p>

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-05-03	K-05-03
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FW
LIMITED BY
REACTOR

EVENT POINT 1135

INDICATED CONDITION:

- o NI POWER AND REACTOR DEMAND ARE MISMATCHED BY MORE THAN 5%.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o NEUTRON ERROR >5% (POSITIVE OR NEGATIVE) IC-25-NEI.
- o UNIT MASTER IN TRACK ALARM.

OPERATOR ACTIONS FOR A VALID ALARM:

- o STABILIZE RCS PRESSURE AND TEMPERATURE USING PZR HEATERS, SPRAY, AND BALANCE FEED FLOW WITH REACTOR POWER.
- o INVESTIGATE AND CORRECT THE CAUSE OF REACTOR DEMAND MISMATCH.

DISCUSSION:

THIS ALARM OCCURS WHENEVER REACTOR DEMAND AND NI POWER VARY BY MORE THAN 5%.

IF ONE OR BOTH FW LOOP MASTERS ARE IN AUTO THE FEEDWATER LIMITED BY REACTOR CROSS-LIMIT WILL INCREASE FEEDWATER DEMAND WHEN NEUTRON ERROR IS > +5%, AND DECREASE FEEDWATER DEMAND WHEN NEUTRON ERROR IS < -5%. THIS MATCHES FEEDWATER TO WITHIN 5% OF NI POWER.

PLACING REACTOR AND DIAMOND IN HAND WILL REMOVE ANY CROSS-LIMIT SIGNAL TO FEEDWATER.

NEUTRON ERROR IS DEFINED AS HIGH SELECTED NI POWER MINUS RX DEMAND.

REFERENCES: ICS DIGITAL AND ANALOG DRAWINGS

SENSING ELEMENT: ICS MODULE 3-7-5

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-05-04	K-05-04
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REACTOR
DEMAND LIMITED
HIGH

EVENT POINT 1112

INDICATED CONDITION:

- o REACTOR DEMAND >102%.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o REACTOR BAILEY DEMAND METER INDICATION.
- o NUCLEAR INSTRUMENTS.

OPERATOR ACTIONS FOR A VALID ALARM:

- o REDUCE ULD DEMAND TO $\leq 100\%$
- o ENSURE REACTOR POWER IS LESS THAN 100% RTP PER TS.

DISCUSSION:

THIS ALARM INDICATES THE REACTOR (SUBSECTION) DEMAND IS LIMITED TO <102%.

IF ULD INCREASES ANY FURTHER A REACTOR TO FEEDWATER MISMATCH WILL DEVELOP.

THIS CONDITION CAN BE CAUSED BY A LOSS OF OVERALL PLANT EFFICIENCY.

REFERENCES: ICS ANALOG AND DIGITAL DRAWINGS

SENSING ELEMENT: ICS LIMITER MODULE IC-3811-RC; SIGNAL MONITOR IC-3611-RC

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-07-02	K-07-02
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STEAM GEN A
LEVEL
HIGH/LOW

EVENT POINT 0943

<p>INDICATED CONDITION:</p> <ul style="list-style-type: none"> o STEAM GENERATOR "A" LEVEL >93.5% AS SENSED BY SP-1A-LS1.
<p>REDUNDANT INDICATION WHICH WILL VERIFY ALARM:</p> <ul style="list-style-type: none"> o STEAM GENERATOR "A" LEVEL INDICATION.
<p>OPERATOR ACTIONS FOR A VALID ALARM:</p> <ul style="list-style-type: none"> o DETERMINE CAUSE AND RESTORE STEAM GENERATOR LEVEL. o TAKE MANUAL CONTROL OF FEEDWATER VALVES AND/OR MAIN FEED PUMP AND REDUCE FEED RATE TO STEAM GENERATOR "A". o IF STEAM GENERATOR LEVEL CONTINUES TO INCREASE CONSIDERATION SHOULD BE GIVEN TO ISOLATE MAIN FEEDWATER TO STEAM GENERATOR "A" USING EFIC MAIN FEEDWATER ISOLATION PUSHBUTTONS.
<p>DISCUSSION:</p> <p>IF ICS CONTROLS DOWNSTREAM OF THE LEVEL LIMITER ARE IN AUTO THE OTSG LEVELS SHOULD BE MAINTAINED AT THE HIGH LIMIT OF APPROXIMATELY 95%.</p> <p>VERY HIGH LEVELS IN A STEAM GENERATOR MAY CAUSE CARRYOVER AND DAMAGE THE MAIN TURBINE.</p> <p>SF-1A-LS1 INPUT IS FROM "A" STEAM GENERATOR OPERATE LEVEL. THIS IS AN EXPECTED ALARM WHEN THE UNIT IS SHUTDOWN AND GENERATOR IS FILLED PER OP-209.</p>
<p>REFERENCES: DRAWING 208-039 SHEET MS-14</p>
<p>SENSING ELEMENT: SP-1A-LS1</p>

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-07-04	K-07-04
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STEAM GEN A
LOW LEVEL
LIMITED

EVENT POINT 1128

<p>INDICATED CONDITION:</p> <ul style="list-style-type: none">o LOOP "A" FEEDWATER DEMAND IS ON LOW LEVEL LIMIT CONTROL.
<p>REDUNDANT INDICATION WHICH WILL VERIFY ALARM:</p> <ul style="list-style-type: none">o ICS MAINTAINS STEAM GENERATOR "A" AT APPROXIMATELY 32.5" ON THE START UP LEVEL INDICATOR.
<p>OPERATOR ACTIONS FOR A VALID ALARM:</p> <ul style="list-style-type: none">o ENSURE ICS MAINTAINS OTSG LEVEL \geq 32.5" ON THE START UP LEVEL INDICATOR.o IF LEVEL IS NOT BEING MAINTAINED BY ICS THEN MANUALLY CONTROL OTSG LEVEL USING FEEDWATER CONTROL VALVES AND MAIN FEED PUMP SPEED FOR 80 PSID.
<p>DISCUSSION:</p> <p>THIS ALARM INDICATES THAT ICS IS TRYING TO CONTROL OTSG LEVEL AT THE LOW LEVEL LIMIT SETPOINT.</p>
<p>REFERENCES: ICS AND NNI DRAWINGS</p>
<p>SENSING ELEMENT: ICS MODULE 3-7-5</p>

ICS-K ANNUNCIATOR RESPONSE	ICS-CY3-08-03	K-08-03
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STEAM GEN B
BTU
CONDITION

EVENT POINT 1127

<p>INDICATED CONDITION:</p> <ul style="list-style-type: none"> o STEAM GENERATOR "B" FEEDWATER DEMAND IS >BTU LIMIT AS CALCULATED BY ICS. 				
<p>REDUNDANT INDICATION WHICH WILL VERIFY ALARM:</p> <ul style="list-style-type: none"> o <u>THE FOLLOWING PARAMETERS INPUT TO A BTU CONDITION:</u> <table data-bbox="284 1032 1161 1095"> <tr> <td>OTSG OUTLET PRESSURE HIGH</td> <td>FEEDWATER TEMPERATURE LOW</td> </tr> <tr> <td>RCS Th TEMPERATURE LOW</td> <td>RCS FLOW LOW</td> </tr> </table> 	OTSG OUTLET PRESSURE HIGH	FEEDWATER TEMPERATURE LOW	RCS Th TEMPERATURE LOW	RCS FLOW LOW
OTSG OUTLET PRESSURE HIGH	FEEDWATER TEMPERATURE LOW			
RCS Th TEMPERATURE LOW	RCS FLOW LOW			
<p>OPERATOR ACTIONS FOR A VALID ALARM:</p> <ul style="list-style-type: none"> o INVESTIGATE AND CORRECT CAUSE OF ALARM CONDITION. o DURING REDUCED Tave OPERATIONS AT THE END OF FUEL CYCLE LIFE (EOL) THIS ALARM IS ACCEPTABLE PROVIDED > 44° MAINSTEAM SUPERHEAT IS MAINTAINED. 				
<p>DISCUSSION:</p> <p>THE BTU LIMIT ALARM INDICATES CONDITIONS WHERE EITHER, THE ENERGY INPUT TO THE OTSG IS NOT SUFFICIENT, OR FEEDWATER/OTSG TEMPERATURE/PRESSURE ARE INADEQUATE TO MAINTAIN REQUIRED SUPERHEAT TO OPERATE THE MAIN TURBINE.</p> <p>WITHOUT SUFFICIENT SUPERHEAT THERE IS A RISK OF CARRYOVER DAMAGE TO THE TURBINE BLADING.</p>				
<p>REFERENCES: ICS/NNI DRAWINGS</p>				
<p>SENSING ELEMENT: ICS MODULE 3-7-4</p>				

