

LOSS OF OVERHEAD ANNUNCIATOR SYSTEM

~~CONTROL~~

USE CATEGORY : **I**

FOR INFO ONLY

- 16 -

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REVISION SUMMARY

- ◆ This is a new procedure.
- ◆ S2.OP-AB.ANN-0001(Q), Rev. 0, Loss of Overhead Annunciator System, developed in response to the loss of Overhead Annunciator System.

Implementation

IMPLEMENTATION REQUIREMENTS

- ◆ None

*A/S1
A/S2*

APPROVED:

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12/29/92
Date

ABNORMAL OPERATING PROCEDURE
S2.OP-AB.ANN-0001(Q)
LOSS OF OVERHEAD ANNUNCIATOR SYSTEM

1.0 ENTRY CONDITION

1.1 Any suspected loss of the Overhead Annunciator (OHA) System.

2.0 IMMEDIATE ACTIONS

2.1 None

3.0 SUBSEQUENT ACTIONS

3.1 IF AT ANY TIME a transient occurs or the plant becomes unstable, THEN with concurrence from the SNSS/NSS, DETERMINE the need to TRIP the reactor and GO TO 2-EOP-TRIP-1, Reactor Trip or Safety Injection.

3.2 SNSS/NSS EVALUATE the following evolutions and secure as necessary:

- ◆ Turbine load changes
- ◆ Boron concentration changes
- ◆ Any surveillance tests in progress
- ◆ Any radioactive releases in progress

3.3 SNSS/NSS REFER to the Event Classification Guide.

3.4 ATTEMPT to RESET the OHA System IAW S2.OP-SO.ANN-0001(Q), Overhead Annunciators Operation.

3.5 Did the OHA System reset?

YES

NO ———>

GO TO Step 3.7

↓
*how do they determine
adequacy of the reset*

- 3.6 This procedure has been completed. When conditions permit, return to normal operation IAW the appropriate procedure.
- 3.7 CONTACT Maintenance Controls Department to diagnose and initiate corrective measures.
- 3.8 INITIATE a continuous control console walkdown and MONITOR plant status with HEIGHTENED AWARENESS using the following alternate means:
- ◆ Control Console Indicators
 - ◆ Plant Computer (P-250)
 - ◆ Reactor Protection System Status Panel (RP4)
 - ◆ All Recorder Panels (RP)
 - ◆ REFER to Attachments 1 through 9 as applicable to identify alternate indication and compensatory actions and determine additional plant equipment monitoring requirements. USE attachments in conjunction with applicable Alarm Response Procedures.
- 3.9 DISPATCH personnel as needed into the plant to begin monitoring of equipment and local annunciator panels at an increased frequency.
- 3.10 IF a load change or a plant startup is in progress, THEN consideration should be given to the extent of the annunciator failure and the ability to ensure plant is in a safe condition.
- ◆ LIMIT load changes to < 5%/HR OR STOP plant startup operations until the OHA System has been repaired.
- 3.11 WHEN cause of the OHA System malfunction has been corrected, THEN RESET the OHA System IAW S2.OP-SO.ANN-0001(Q), Overhead Annunciators Operation.
- 3.12 All steps have been addressed. Complete conditional Step 3.11 as applicable to complete this procedure and when conditions permit, return to normal operation IAW the appropriate procedure.

END OF PROCEDURE

ATTACHMENT 1

WINDOW BOX A

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
A-1 ANNUN PWR FAIL	ANNUNCIATOR CABINET 116-2: All 8 Power Supply LEDs lit	
A-2 SPRY COMPR CH 1 UNSAFE	PROTECTION RACK #4: Test Panel (CT Switch) cover installed <u>and</u> all Bistable Switches down	
A-3 SPRY COMPR CH 1 ON TEST	PROTECTION RACK #4: Test Panel (CT Switch) cover installed	
A-4 RX PROT CH 1 ON TEST	PROTECTION RACKS #1, 2, 3, 4, and 5: All doors closed Test Panel (CT Switch) cover installed	
A-5 NIS CH ON TEST	NI Cabinets: All NI Channels OPERATION SELECTOR switches in Normal	
A-6 RMS TRBL	RMS Computer: No channel with Hi alarm, Trouble alarm, or in test 2RP1 Radiation Alarm Annunciator: No unacknowledged alarms	

ATTACHMENT 1

WINDOW BOX A

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
A-7 FIRE PROT FIRE	Unit 1 OHA A-7: 2RP5: No coded fire alarms	NOTIFY Site Protection to monitor FP system.
A-8 FIRE PROT CO ₂ / HALON DISCH	Unit 1 OHA A-8: 2RP5: CO ₂ /Halon discharge light not lit	NOTIFY Site Protection to monitor FP system.
A-9 ANNUN LOGIC FAIL	None	None required
A-10 SPRY COMPR CH II UNSAFE	PROTECTION RACK #9: Test Panel (CT Switch) cover installed <u>and</u> all Bistable Switches down	
A-11 SPRY COMPR CH II ON TEST	PROTECTION RACK #9: Test Panel (CT Switch) cover installed	
A-12 RX PROT CH II ON TEST	PROTECTION RACK #6, 7, 8, 9, and 10: All doors closed Test Panel (CT Switch) cover installed	
A-13 RPI ON TEST	RPI-1, 2, 3, and 4 cabinets: All test switches in OPERATE	

ATTACHMENT 1

WINDOW BOX A

TERNATE INDICATION(S)	COMPENSATORY ACTIONS
Typewriter: No. 682	
1 OHA A-15: 2 CR: None	NOTIFY Site Protection to monitor FP system.
Fire Pumps running as indicated Unit 1 OHA A-15 47 indicates closed on 2RP5	NOTIFY Site Protection to monitor FP system.
ISOLATION CABINET 118-2: DET light off on ISOLATION CHECKS panel	
SECTION RACK #12: Panel (CT Switch) cover closed and all Bistable Switches	
SECTION RACK #12: Panel (CT Switch) cover closed	
SECTION RACKS #11, 12, 13: Doors closed Panel (CT Switch) cover closed	

ATTACHMENT 1

WINDOW BOX A

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
A-21 213 PNL DOOR OPEN	None	Check the following doors closed: 205-2: 21 AFP Panel 206-2: 22 AFP Panel 207-2: 23 AFP Panel 213-2: Hot S/D Panel 216-2: Chg Pmps Flow/Press Panel
A-22 NORTH PEN AREA AMB TEMP HI	Aux Typewriter: Point No. 732	
A-23 RE PMP 1/2 TRBL	Unit 1 OHA A-23	NOTIFY Site Protection to monitor Fire Pumps.
A-24 FIRE PROT WTRFLO IN 1/2 AUX BLDG	No Fire Pumps running as indicated on Unit 1 OHA A-15	NOTIFY Site Protection to monitor FP system.
A-25 AUX ALM SYS PWR FAIL	AUX ANNUNCIATOR RACK 133: Front door: SER Updating properly Back door: PRIME, BACKUP, and PWR NORMAL lights on	
A-26 SPRY COMPR CH IV UNSAFE	PROTECTION RACK #14: Test Panel (CT Switch) cover installed <u>and</u> all Bistable Switches down	

ATTACHMENT 1

WINDOW BOX A

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
A-27 SPRY COMPR CH IV ON TEST	PROTECTION RACK #14: Test Panel (CT Switch) cover installed	
A-28 RX PROT CH IV ON TEST	PROTECTION RACKS #14, 15, and 31: All doors closed Test Panel (CT Switch) cover installed	
A-29 SEC 2A-2C TEST OR TRBL	<u>In each SAFEGUARDS EQUIPMENT CONTROL SYSTEM UNIT No. 2A, 2B, and 2C:</u> All 13 blocking switches down VI TEST & V2 TEST switches OFF Doors closed TEST No. indicator lights energized Auto Test Switch in RESET <u>At 2CC3:</u> All three SEQUENCE IN TEST bezel lights OFF	
A-31 FIRE PROT WTR PRESS LO	Unit 1 OHA A-31	NOTIFY Site Protection to monitor FP system pressure.
A-32 FIRE PROT 28VDC LOSS	None	NOTIFY Site Protection to monitor Fire Panel 2FP4 for indication of loss of 28VDC.

ATTACHMENT 1

WINDOW BOX A

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
A-33 AUX ALM SYS GND DET	AUX ANN CABINET 34: (+) and (-) GROUND lights OFF	
A-34 SSPS TRN A TRBL	<u>SSPS Train A Cabinets:</u> GEN WARNING lamp not lit on Logic Cabinet <u>2RP4:</u> Mimic lights not flashing (train disagreement) NOTE: This alarm indicates that SSPS is in a partial trip condition. A Trouble Alarm on the other train will initiate a Reactor Trip	
A-35 SSPS TRN A ON TEST	<u>SSPS Train A Cabinets:</u> All doors closed All test switches in the OUTPUT TEST AND INTERFACE CABINET in UNBLOCK OUTPUT	
A-36 AMSAC BYPASSED	Turbine Power > 40%	
A-38 MIMS IMPACT	Loose Parts Monitoring Panel 2PNL-998: AMP lights off (all 6 MIM Modules)	

ATTACHMENT 1

WINDOW BOX A

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
A-39 FIRE PROT CO ₂ PRESS HI OR LO	None	NOTIFY Site Protection to monitor CO ₂ pressure.
A-41 AUX ALM SYS PRINTER	2RP9: No alarms on printer DATA LOGGING ALARM light ON	
A-42 SSPS TRN B TRBL	<u>SSPS Train B Cabinets:</u> GEN WARNING lamp not lit on Logic Cabinet <u>2RP4:</u> Mimic lights not flashing (train disagreement) NOTE: This alarm indicates that SSPS is in a partial trip condition. A Trouble Alarm on the other train will initiate a Reactor Trip	
A-43 SSPS TRN B ON TEST	<u>SSPS Train B Cabinets:</u> All doors closed All test switches in the OUTPUT TEST AND INTERFACE CABINET in UNBLOCK OUTPUT	
A-44 AMSAC TEST OR TRBL	AMSAC Cabinet: No red lights lit SYSTEM BYPASS switch in NORMAL	

ATTACHMENT 1

WINDOW BOX A

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
A-46 CMPTR FAIL	Control Room CRT Updating properly	
A-47 FIRE PROT TRBL	2RP5: No Zone alarms Verify valve "closed" positions not lost Verify CLOSED GATE VALVE LOSS OF AC light is OFF. Verify AUDIBLE ALARM CODER LOSS OF AC light is OFF.	

ATTACHMENT 2

WINDOW BOX B

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
B-1 FRESH WTR SYS TRBL	Unit 1 OHA B-1	
B-2 2A 125VDC CNTRL BUS VOLT LO	2RP9: 2A BATTERY 125 VOLTS Voltmeter VM-13	Monitor Bus voltages
B-3 2A VTL INSTR BUS INVRT FAIL	Aux Annunciator Typewriter: Point No. 0147	Monitor Inverter indications
B-4 250VDC BUS VOLT HI OR LO	2RP9: 250 VOLT BATTERY Voltmeter VM-23	Monitor Bus voltages
B-5 21 SW HDR PRESS HI	2CC1: 21 HEADER PRESSURE indication PA-5373	
B-6 22 SW HDR PRESS HI	2CC1: 22 HEADER PRESSURE indication PA-5386	
B-7 TURB AREA SW HDR PRESS HI	None	Monitor local Service Water Supply Panel 273-2 (88' TGA)

ATTACHMENT 2

WINDOW BOX B

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
B-8 21-23 SW STRAIN TRBL	None	Local operator monitor D/P at strainer
B-9 HTG WTR STM SYS TRBL	Unit 1 OHA B-9	Monitor Panel 470 alarms and indications (120' TGA)
B-10 2B 125VDC CNTRL BUS VOLT LO	2RP9: 2B BATTERY 125 VOLTS Voltmeter VM-15	Monitor Bus voltages
B-11 VTL INSTR BUS INVRT FAIL	Aux Typewriter: Point No. 0155	Monitor Inverter indications
B-12 VTL FREEZE PROT TRBL	Doric Points: 101-219	
B-13 21 SW HDR PRESS LO	2CC1: 21 HEADER PRESSURE indication 2PA-5373	
B-14 22 SW HDR PRESS LO	2CC1: 22 HEADER PRESSURE indication 2PA-5386	
B-15 TURB AREA V HDR PRESS LO	None	Monitor local Service Water Supply Panel 273-2 (88' TGA)

ATTACHMENT 2

WINDOW BOX B

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
B-16 24-26 SW STRAIN TRBL	None	Monitor D/P at strainer
B-17 AUX BOIL TRBL	Unit 1 OHA B-17	Monitor Panel 470 alarms and indications (120' TGA)
B-18 2C 125VDC CNTRL BUS VOLT LO	2RP9: 2C BATTERY 125 VOLTS Voltmeter V ₁ -236	Monitor Bus voltages
B-19 2C VTL INSTR BUS INVRT FAIL	Aux Typewriter: Point No. 0134	Monitor Inverter indications
B-20 CMPTR INVRT TRBL	P-250 Room: Inverter status lights and voltmeters	
B-21 21-23 SW SCRNWSH TRBL	None	Monitor Service Water Screen Wash Control Panel 361-2A at Service Water Structure
B-22 24-26 SW SCRNWSH TRBL	None	Monitor Service Water Screen Wash Control Panel 361-2B at Service Water Structure

ATTACHMENT 2

WINDOW BOX B

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
B-23 21-23 SW PMP BRG WTR PRESS LO	None	Monitor local bearing water pressures at Service Water Structure
B-24 24-26 SW PMP BRG WTR PRESS LO	None	Monitor local bearing water pressures at Service Water Structure
B-26 2A 28VDC CNTRL BUS VOLT LO	2RP9: 2A BATTERY 28 VOLTS Voltmeter VM-33	Monitor Bus voltages
B-27 2D VTL INSTR BUS INVRT FAIL	Aux Typewriter: Point No. 0159	Monitor Inverter indications
B-29 21-23 SW PMP SUMP AREA LVL HI	None	Monitor sump level at Service Water Structure
B-30 24-26 SW PMP SUMP AREA LVL HI	None	Monitor sump level at Service Water Structure
B-31 21-23 SW PMP ROOM TEMP HI OR LO	None	Monitor room temperatures at Service Water Structure

ATTACHMENT 2

WINDOW BOX B

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
B-32 24-26 SW PMP ROOM TEMP HI OR LO	None	Monitor room temperatures at Service Water Structure
B-34 2B 28VDC CNTRL BUS VOLT LO	2RP9: 2B BATTERY 28 VOLTS Voltmeter VM-35	Monitor Bus voltages
B-35 21 ESS CONTROLS INVRT FAIL	Aux Typewriter Point 200 for normal source failure to either 21 or 22 ESS Inverter	Monitor 21 ESS Controls Inverter
B-37 21 CC HX SW FLO HI	None	Monitor flow at 21 CC Hx
B-38 22 CC HX SW FLO HI	None	Monitor flow at 22 CC Hx
B-43 22 ESS CONTROLS INVRT FAIL	Aux Typewriter Point 200 for normal source failure to either 21 or 22 ESS Inverter	Monitor 22 ESS Controls Inverter

ATTACHMENT 2

WINDOW BOX B

ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
one	Monitor valve position (78' Mech Pen Room)
ux Typewriter: oint Nos. 754, 755	Monitor sump in 78' Mech Pen Room

ATTACHMENT 3

WINDOW BOX C

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
C-1 GAS ONLY TRBL	None	Monitor alarms and indications on WASTE DISPOSAL GAS ANALYZER Panel 110-2 (122' AB)
C-2 CNTMT SUMP PMP START	Aux Typewriter: Point Nos. 683, 704	
C-3 21 CC HX IN TEMP HI	None	Monitor temperatures on No. 21 CC HX Panel 203-2 (TIC-627A)
C-4 21 CFCU AIRFLO TRBL	2CC1: Damper position indication	
C-5 21 CFCU WTRFLO TRBL	2CC1: SW Valve positions	
C-6 CNTMT PRESS HI-HI	2CC1: Containment Pressure Recorders PR-948A and PR-948B, Meters PI-948A thru D 2RP4: Bistable indicating lights	
C-7 21 H ₂ RECOMB TRBL	Equipment Room: POWER AVAILABLE light at Hydrogen Recombiner Panel	

ATTACHMENT 3

WINDOW BOX C

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
C-8 φ A CNTMT ISOL ACT	2CC1: φA AND CONT VENT ISOLATION orange bezel or RESET φA ISOLATION green bezel 2RP4: Actuation light and valve indicating lights	
C-9 104 PNL TRBL	None	Monitor WASTE DISPOSAL BORON RECOVERY PANEL 104-2 alarms and indications
C-10 CNTMT SUMP OVERFLO	2CC1: Sump level indication LA-2445, LA-2448	
C-11 22 CC HX IN TEMP HI	None	Monitor temperatures on No. 22 CC HX Panel 204-2 (TIC-627B)
C-12 22 CFCU AIRFLO TRBL	2CC1: Damper position indication	
C-13 22 CFCU WTRFLO TRBL	2CC1: SW Valve positions	

ATTACHMENT 3

WINDOW BOX C

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
C-14 CNTMT PRESS HI	2CC1: Containment Pressure Recorders PR-948A and PR-948B, Meters PI-948A thru D 2RP4: Bistable indicating lights	
C-15 22 H ₂ RECOMB TRBL	Equipment Room: POWER AVAILABLE light at Hydrogen Recombiner Panel	
C-16 φ B CNTMT ISOL ACT	2CC1: φB AND SPRAY ACTUATION CONT VENT ISOLATION orange bezel or RESET φB ISOLATION green bezel 2RP4: Actuation light and valve indicating lights	
C-17 21-23 CVCS HUT LVL HI	2RP1: LA-4145	
C-18 RX SUMP OVRFLO	Aux Typewriter: Point 684	
C-19 SFP TEMP HI	None	Monitor temperature on Panel 431

ATTACHMENT 3

WINDOW BOX C

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
C-20 23 CFCU AIRFLO TRBL	2CC1: Damper position indication	
C-21 23 CFCU WTRFLO TRBL	2CC1: SW Valve positions	
C-22 CNTMT SPRY ACT	2CC1: φB AND SPRAY ACTUATION CONT VENT ISOLATION orange bezel or RESET SPRAY ACT 2RP4: Actuation light	
C-23 CNTMT H ₂ LVL HI	2RP5: XA-3361, and XA-3362	
C-24 CBV ISOL SIGNAL PRESENT	2CC1: RESET CONT VENT ISOLATION green bezel and No actuation signals present from RMS	
C-25 BA EVAP TRBL	None	Monitor 30 GPM BA EVAPORATOR Panel 301-2 alarms and indications
C-26 ?1 RHR SUMP OVRFLO	Aux Typewriter: Point Nos. 835, 836	

ATTACHMENT 3

WINDOW BOX C

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
C-27 SFP LVL HI	None	Monitor level
C-28 24 CFCU AIRFLO TRBL	2CC1: Damper position indication	
C-29 24 CFCU WTRFLO TRBL	2CC1: Valve positions	
C-30 CFCU LK DET HI-HI	2CC1: LI-730	
C-33 RWST/PWST OVRFLO	Use Unit 1 OHA C-33 alarm	
C-34 22 RHR SUMP OVRFLO	Aux Typewriter: Point Nos. 757, 758	
C-35 SFP LVL LO	None	Monitor level
C-36 25 CFCU AIRFLO TRBL	2CC1: Damper position indication	

ATTACHMENT 3

WINDOW BOX C

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
C-37 25 CFCU WTRFLO TRBL	2CC1: SW Valve positions	
C-38 CFCU LK DET HI	2CC1: LI-730	
C-46 PERSONNEL ACCESS DOOR OPEN	2RP3: Door position light indication	

ATTACHMENT 4

WINDOW BOX D

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
D-2 21/22SJ54 OFF NORM POS	2CC1: Valve position indication Aux Typewriter: Point Nos. 691, 692	
D-3 2SJ30 OFF NORM POS	2CC1: Valve position indication Aux Typewriter: Point No. 685	
D-4 21 RCP BRG OIL LVL HI	RCP Vibrations on 2RP3 and behind 2RP4 RCP Brg Temps on P-250	
D-5 22 RCP BRG OIL LVL HI	RCP Vibrations on 2RP3 and behind 2RP4 RCP Brg Temps on P-250	
D-6 23 RCP BRG OIL LVL HI	RCP Vibrations on 2RP3 and behind 2RP4 RCP Brg Temps on P-250	
D-7 24 RCP BRG OIL LVL HI	RCP Vibrations on 2RP3 and behind 2RP4 RCP Brg Temps on P-250	

ATTACHMENT 4

WINDOW BOX D

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
D-8 RC PRESS HI	2CC2: Recorders / meters	
D-10 23/24SJ54 OFF NORM POS	Aux Typewriter: Point Nos. 693, 694	
D-11 2SJ69 OFF NORM POS	2CC1: Valve position indication Aux Typewriter: Point No. 623	
D-12 21 RCP BRG OIL LVL LO	RCP Vibrations on 2RP3 and behind 2RP4 RCP Brg Temps on P-250	
D-13 22 RCP BRG OIL LVL LO	RCP Vibrations on 2RP3 and behind 2RP4 RCP Brg Temps on P-250	
D-14 23 RCP BRG OIL LVL LO	RCP Vibrations on 2RP3 and behind 2RP4 RCP Brg Temps on P-250	
D-15 24 RCP BRG OIL LVL LO	RCP Vibrations on 2RP3 and behind 2RP4 RCP Brg Temps on P-250	

ATTACHMENT 4

WINDOW BOX D

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
D-16 RC PRESS LO	2CC2: Recorders / Meters	
D-18 21/22SJ40 OFF NORM POS	2CC1: Valve position indication Aux Typewriter: Point Nos. 705, 706	
D-19 2SJ135 OFF NORM POS	2CC1: Valve position indication Aux Typewriter: Point No. 686	
D-20 21 RCP BRG CLG WTR FLO LO	RCP Brg Temps on P-250	FIC-613 at Panel 237-2 (78' Ctmt)
D-21 22 RCP BRG CLG WTR FLO LO	RCP Brg Temps on P-250	FIC-616 at Panel 232-2 (78' Ctmt)
D-22 23 RCP BRG CLG WTR FLO LO	RCP Brg Temps on P-250	FIC-619 at Panel 241-2 (78' Ctmt)

ATTACHMENT 4

WINDOW BOX D

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
D-23 24 RCP BRG CLG WTR FLO LO	RCP Brg Temps on P-250	FIC-622 at Panel 240-2 (78' Cmt)
D-24 RX TRIP & TAVE LO	2RP4: Rx Trip light Loop Tave indicating lights 2CC2: Loop Tave Rx TRIP & Bypass Bkrs OPEN	
D-26 21/22SJ44 OFF NORM POS	2CC1: Valve position Indication Aux Typewriter: Point Nos. 412, 413	
D-27 2CS14 OFF NORM POS	2CC1: Valve position Indication Aux Typewriter: Point No. 624	
D-28 21 RCP BKR OPEN/FLO LO	2CC1: 21 RCP Start/Stop Bezel Lights Loop Flow meters (FI-414, 415, 416)	

ATTACHMENT 4

WINDOW BOX D

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
D-29 22 RCP BKR OPEN/FLO LO	2CC1: 22 RCP Start/Stop Bezel Lights Loop Flow meters (FI-424, 425, 426)	
D-30 23 RCP BKR OPEN/FLO LO	2CC1: 23 RCP Start/Stop Bezel Lights Loop Flow meters (FI-434, 435, 436)	
D-31 24 RCP BKR OPEN/FLO LO	2CC1: 24 RCP Start/Stop Bezel Lights Loop Flow meters (FI-444, 445, 446)	
D-32 TAVE LO	2CC2: Tave Recorders/Meters	
D-34 2RH26 OFF NORM POS	2CC1: Valve position Indication Aux Typewriter: Point No. 695	
D-35 2SJ67/68 OFF NORM POS	2CC1: Valve position Indication Aux Typewriter: Point Nos. 394, 395	

ATTACHMENT 4

WINDOW BOX D

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
D-36 RCP VIB HI	Behind 2RP4: RCP Vibration indicators	
D-37 RCP BRG CLG HDR TEMP HI	Monitor RCP Bearing Temps on P-250	
D-38 THERM BARR TEMP HI	Monitor RCP Seal Water inlet temperatures, Seal d/p, CC Surge Tank level, CC Header activity	
D-39 RCP SEAL WTR BYP FLO LO	Monitor RCP Seal Water inlet and outlet temperatures	
D-40 SUBCLG CH A MARGIN LO	2CC2: Ch A Subcooling Meter PA-15606 2RP4: SUBCOOLING MARGIN MONITOR 2XD 15726B	
D-41 BIT DISCH PRESS HI	2CC1: BIT Pressure meter PI-942	
D-42 21/22SJ49 OFF NORM POS	2CC1: Valve position Indication Aux Typewriter: Point Nos. 687, 688	

ATTACHMENT 4

WINDOW BOX D

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
D-43 SPRY ADD TK LVL LO	2CC1: Spray Additive Tank Level meter LI-931	
D-44 2RH1 NOT CLSD & RC PRESS HI	2CC1: 2RH1 Valve position ind POPS RC Press PA-9858 2CC2: RC Pressure meters / recorders Aux Typewriter: Point No. 138	
D-45 2RH2 NOT CLSD & RC PRESS HI	2CC1: 2RH2 Valve position ind POPS RC Press PA-9858 2CC2: RC Pressure meters / recorders Aux Typewriter: Point No. 013	
D-46 RX HEAD VENT VLV NOT CLSD	2RP2: Determine valve position from the Valve operate switches	

ATTACHMENT 4

WINDOW BOX D

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
D-47 RHR MIDLOOP SYS TRBL	<u>NOTE: ALARM IS DEACTIVATED IN MODES 1-4</u> P-250 Computer points: Listed in D-47 of S2.OP-AR.ZZ-0004(Q)	
D-48 SUBCLG CH B MARGIN LO	2CC2: Ch B Subcooling Meter XA-3269 2RP4: SUBCOOLING MARGIN MONITOR 2XD 15727B	

ATTACHMENT 5

WINDOW BOX E

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
E-1 21 SEAL WTR INJ FLTR D/P HI	None	Monitor d/p
E-2 POPS CH I ARM	2CC1: PRESSURIZER OVERPRESSURE PROTECTION Bezel indicators	
E-3 POPS CH II ARM	2CC1: PRESSURIZER OVERPRESSURE PROTECTION Bezel indicators	
E-4 PZR LVL HI	2CC2: PRESSURIZER LEVEL HI Bezel Alarm Level indication and recorders 2RP4: Bistable indicating lights	
E-5 SR DET VOLT TRBL	NI Cabinets: DETECTOR VOLTS meter LOSS OF DETECTOR VOLT light	
E-6 IR DET VOLT LOSS	NI Cabinets: LOSS OF DETECTOR VOLT light	
E-7 PR DET VOLT LOSS	NI Cabinets: LOSS OF DETECTOR VOLT light	

ATTACHMENT 5

WINDOW BOX E

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
E-8 ROD INSERT LMT LO	2CC2: CONTROL ROD GROUPS POSITION AND INSERTION LIMITS recorders	
E-9 22 SEAL WTR INJ FLTR D/P HI	None	Monitor d/p
E-10 POPS CH I DISARM / 2PR6 CLSD	2CC1: PRESSURIZER OVERPRESSURE PROTECTION Bezel indications 2CC2: 2PR6 indication	
E-11 POPS CH II DISARM / 2PR7 CLSD	2CC1: PRESSURIZER OVERPRESSURE PROTECTION Bezel indications 2CC2: 2PR7 indication	
E-12 PZR PRESS LO	2CC2: Meters and recorders 2RP4: Bistable indicating lights	

ATTACHMENT 5

WINDOW BOX E

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
E-13 SR HI FLUX AT S/D	NI Cabinets: HIGH FLUX AT SHUTDOWN lights Control Room: High Audio Count Rate	
E-14 IR N35 COMPEN VOLT LOSS	NI Cabinets: LOSS OF COMP VOLT light	
E-15 PR HI RNG FLUX HI	2CC2: Meter indications 2RP4: Bistable indicating lights NI Cabinets. OVERPOWER TRIP HIGH RANGE lights	
E-16 ROD INSERT LMT LO-LO	2CC2: CONTROL ROD GROUPS POSITION AND INSERTION LIMITS recorders	
E-17 BA BATCH TK LVL LO	None	Monitor indications at Panel 411-2

ATTACHMENT 5

WINDOW BOX E

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
E-18 POPS CH I AUX AIR PRESS LO	2CC1: CR operator can verify normal Control Air pressures and position of CONTAINMENT CNTRL AIR ISOL VALVES 21/22CA330 OPEN	
E-19 POPS CH II AUX AIR PRESS LO	2CC1: CR operator can verify normal Control Air pressures and position of CONTAINMENT CNTRL AIR ISOL VALVES 21/22CA330 OPEN	
E-20 PZR HTR ON LVL HI	2CC2: "21/22 BACKUP ON" Bezel lights (Bezel Pushbutton) Pzr level can be compared against program level (as shown in S2.OP-AR.ZZ-0005(Q))	
E-21 SR HI FLUX AT S/D BLOCKED	NI Cabinets: HIGH FLUX AT SHUTDOWN switches in BLOCK	
E-22 IR N36 COMPEN VOLT LOSS	NI Cabinets: LOSS OF COMP VOLT light	

ATTACHMENT 5

WINDOW BOX E

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
E-23 PR LO RNG FLUX HI	2CC2: Meter indications 2RP4: Bistable indicating lights NI Cabinets: OVERPOWER TRIP LOW RANGE lights	
E-24 ROD DEV OR SEQ	2CC2: Compare bank overlap Compare all IRPIs against the Group Step Counters	
E-25 BA BATCH TK TEMP HI OR LO	None	Monitor indications at Panel 411-2
E-26 2PR1 NOT FULL CLSD	2CC2: 2PR1 Indication TI-463 RELIEF VALVE OUTLET TEMP PRT level, temperature and pressure (LI-470, TI-471, PI-472)	

ATTACHMENT 5

WINDOW BOX E

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
E-27 2PR2 NOT FULL CLSD	2CC2: 2PR2 Indication TI-463 RELIEF VALVE OUTLET TEMP PRT level, temperature and pressure (LI-470, TI-471, PI-472)	
E-28 PZR HTR ON PRESS LO	2CC2: Pressure meters/recorders 21 BACKUP ON Bezel light flashing 22 BACKUP ON Bezel light flashing	
E-29 SR & IR TRIP BYP	2RP4: Source Range/Step Train A & B TRIP BLOCKED lights lit NI Cabinets: LEVEL TRIP switch in BYPASS	
E-30 IR HI FLUX ROD WDRWL STOP	2CC2: IR and PR indication NI Cabinets: HIGH LEVEL ROD STOP lights	
E-31 PR OVRPWR ROD STOP	2CC2: PR indication NI Cabinets: OVERPOWER ROD STOP lights	

ATTACHMENT 5

WINDOW BOX E

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
E-32 ROD DRIVE PWR SPLY GND FAULT	None	Monitor the Ground Relay on the MG Control Panel (84' Swgr room)
E-36 PZR HTR OFF LVL LO	2CC2: Pressurizer level meters / recorders 21 BACKUP OFF Bezel light flashing 22 BACKUP OFF Bezel light flashing CNTRL GRP HTRS OFF Bezel light flashing	
E-37 CH C SDM DECRNG	2RP1: Red ALARM on Channel C Gamma-Metric	
E-38 UPPER SECT DEV ABV 50% PWR	NI Cabinets: UPPER SECTION DEVIATION light on Detector Current Comparator	
E-39 PR CH DEV	NI Cabinets: CHANNEL DEVIATION Comparator & Rate Module 2CC2: Power Range Meters	

ATTACHMENT 5

WINDOW BOX E

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
E-40 ROD BANK URGENT FAIL	2CC2: URGENT FAILURE bezel alarm	
E-41 LTDWN HX OUT TEMP HI	2CC2: Letdown temperature meter (TI-130A)	
E-44 PZR SFTY VLV 2PR3 - 2PR5 NOT CLSD	2CC2: Safety Valve Temperatures (TI-465, 467, 469) PRT level, temperature, and pressure (LI-470, TI-471, PI-472)	
E-45 CH D SDM DECRNG	2RP1: Red ALARM light on Channel D Gamma-Metric	
E-46 LOWER SECT DEV ABV 50 % PWR	NI Cabinets: LOWER SECTION DEVIATION light on Detector Current Comparator	
E-47 PR NEUT FLUX RATE HI	2RP4: Bistable indicating lights NI Cabinets: POSITIVE RATE TRIP or NEGATIVE RATE TRIP lights	

ATTACHMENT 5

WINDOW BOX E

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
E-48 ROD BOTTOM	2CC2: IRPIs 2RP3: REACTOR CORE Map ROD BOTTOM lights	

ATTACHMENT 6

WINDOW BOX G

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
G-1 LOOP 21 STM LN D/P LO	2CC2: Steam Generator Pressure 2RP4: Bistable status lights	
G-2 21 SG STM LN ISOL	2CC1: Safeguards Bezels 2RP4: 21 STM. GEN. lights	
G-3 EH PROT SYS TRBL	2CC3 EH Operator Panel: Monitor Mwe meter and Shaft Speed for indication of response to Overspeed condition (load drop)	
G-4 TURB AUTO STOP OIL PRESS LO	2RP4: Bistable status lights	
G-5 CNDSR VAC LO	2RP1: Condenser Vacuum Recorder 2CC3: CONDENSER VACUUM LO Alarm on Steam Generator Blowdown Bezel Condenser Absolute Pressure meters (PA-5224 & PA-5225) on Condenser Bezel	

ATTACHMENT 6

WINDOW BOX G

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
G-6 21 AFW DEF RUNOUT PROT	2CC2: 21 Aux Feed Pump PRESSURE OVERRIDE DEFEAT Bezel PB	
G-7 21-23 A CW SCRNWSH TRBL	2CC3: Screen Well d/p meter	Monitor Traveling Screens
G-8 TAC EXP TK LVL HI OR LO	None	Monitor level at gauge glass locally
G-9 _COP 22 STM LN D/P LO	2CC2: Steam Generator Pressure 2RP4: Bistable status lights	
G-10 22 SG STM LN ISOL	2CC1: Safeguards bezel 2RP4: 22 STM. GEN. lights	
G-11 EH SPEED OR LOAD CH FAIL	2CC3: TURBINE EH CONTROL STATUS Panel SPEED CHAN or LOAD CHAN lights	

ATTACHMENT 6

WINDOW BOX G

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
G-12 TURB STM STOP VLV CLSD	2CC3: TURBINE E-H CONTROL Panel valve positions 2RP4: STOP VALVES indication	
G-13 CNDSR VAC LO-LO	2CC3: Condenser Absolute Pressure meters (PA-5224 & PA-5225) 2RP1: Condenser Vacuum Recorder	
G-14 22 AFW DEF RUNOUT PROT	2CC2: 22 Aux Feed Pump PRESSURE OVERRIDE DEFEAT Bezel PB	
G-15 21-23 B CW SCRNWSH TRBL	2CC3: Screen Well d/p meter	Monitor Traveling Screens
G-16 TAC EXP TK N ₂ PRESS HI	None	Monitor Tank pressure on PL-3199 on Panel 468-2
G-17 LOOP 23 STM LN D/P LO	2CC2: Steam Generator Pressure 2RP4: Bistable indicating lights	

ATTACHMENT 6

WINDOW BOX G

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
G-18 23 SG STM LN ISOL	2CC1: Safeguards bezels 2RP4: 23 STM. GEN. lights	
G-19 EH RUNBACK OPER	2CC3: Monitor MEGAWATT meter for indication of response to Runback	
G-20 SEAL & CYL HTG STM SYS TRBL	P-250: Points T2007A, 2008A, 2095A, and P2004D, 2010D	Monitor alarms and indications on TURBINE GLAND SEALING STEAM SUPPLY Panel 679-2
G-21 TURB THRUST BRG FAIL	P-250: Point No. P2003D Initiate Turbine Trend Test 24	
G-22 AFW ISOL INTLK BYP	None	
G-23 CW SCRNSH STRAINER D/P HI	None	Monitor D/P
G-24 TAC TEMP HI OR LO	None	Monitor temperature at Panel 666-2

ATTACHMENT 6

WINDOW BOX G

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
G-25 LOOP 24 STM LN D/P LO	2CC2: Steam Generator Pressure 2RP4: Bistable indicating lights	
G-26 24 SG STM LN ISOL	2CC1: Safeguards bezels 2RP4: 24 STM. GEN. lights	
G-27 LO PRESS EXH HOOD TEMP HI	P-250: 21-23 Exhaust Hood temps (T2080A, 2081A, 2082A)	
G-28 AST OIL FILTER HIGH D/P	None	Monitor at Front Standard
G-29 PRIME TK VAC LO	None	Monitor at Panel 563-2
G-30 21 SGFP VIB HI-ALERT	P-250: Inboard and Outboard bearing Vib (Y2614D and Y2615D)	Monitor axial end bearing vibration on SGFP Panels
G-31 CW SCRNWSH PRESS HI OR LO	None	Local operator to monitor pressure

ATTACHMENT 6

WINDOW BOX G

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
G-32 TAC PMP DISCH PRESS HI OR LO	2CC3: TAC Common Discharge pressure meter (PA-5393)	
G-33 STM LN PRESS LO	2CC2: Steam Pressure Bezels 2RP4: Bistable indicating lights	
G-35 TSI TRBL	Turbine Trend Test 24 on the P-250	Monitor TSI Panel 982-2
G-36 COND POL BYP ALERT	2CC3: SGFP SUCTION PRESS RMS Computer: R40 P-250: Condensate inlet temp.	
G-37 PRIME TK WTR LVL HI	None	Monitor sightglasses downstream of float valves at Elevation 120' to determine which are leaking to cause the alarm
G-38 22 SGFP VIB HI-ALERT	P-250: Inboard and Outboard bearing Vib (Y2611D, and Y2612D)	Monitor axial end bearing vibration on SGFP Panels

ATTACHMENT 6

WINDOW BOX G

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
G-39 2 AND 4 CW BRG LUBE PRESS LO	None	Monitor Brg Hdr Pressure
G-43 TURB AREA LVL HI PMP START	Aux Typewriter: Point No. 733	Monitor Turb Bldg sump water level
G-44 COND POL TRBL	None	Chemistry Polisher Operator to monitor local alarms
G-45 COND RTN TK LVL HI OR LO	None	Monitor tank condition
G-46 FW HTR IN VLV TRIP & LVL HI	2CC2: 21-23CN22, 21-23CN27, and 21-23BF7 valve positions (open - normal, closed - high level)	
G-47 NaClO TRBL	None	Chemistry to monitor Chlorination System

ATTACHMENT 7

WINDOW BOX H

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
H-1 GEN LIQ DETS LVL HI	None	Monitor level detectors at Panel 968
H-2 SEAL OIL SKID MTRS TRBL	None	Monitor running status of Main, Recirc and Seal Oil Vacuum pumps. Also monitor Main Seal Oil pump discharge pressure (> 110#)
H-4 GEN OVRLD & OUT OF STEP	2CC3: Supervisory light	
H-5 GEN EXC FLD OVRCUR	2CC3: Voltage Regulator in AUTO, Tracking circuits in ON	
H-6 GEN & XFMR OVRALL DIFF REG	2CC3: Supervisory light	
H-7 MPT L/O RELAY TRIP	None	Monitor relay status at 100 el. Relay Room
H-8 APT L/O RELAY TRIP	None	Monitor relay status at 100 el. Relay Room
H-9 SEAL OIL STOR TK LVL HI OR LO	None	Monitor tank level

ATTACHMENT 7

WINDOW BOX H

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
H-10 MAIN SEAL OIL PMP EMER BKR CLSD	None	Monitor status of power supply at 1H 460V Bus.
H-12 GEN DIFF & LOSS OF FLD	2CC3: Supervisory light	
H-13 GEN FLD OVR VOLT	None	
H-14 GEN & XFMR OVRALL DIFF BU	2CC3: Supervisory light	
H-15 MPT Ø 1 TRBL	None	Monitor transformer local annunciator
H-16 APT TRBL	None	Monitor transformer parameters
H-17 SMOKE IN GEN		Monitor Generator Condition Monitor (2XA-8577) TGA 120'
H-18 EMER SEAL OIL PMP MTR RUN	2CC3: Emergency Seal Oil Pump Bezel	

ATTACHMENT 7

WINDOW BOX H

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
H-20 GEN NEG Ø SEQ	2CC3: Supervisory light	
H-21 GEN VOLT/FREQ HI	2CC3: GENERATOR VOLTS and FREQUENCY meter indication	
H-22 UNIT ISOL TRIP REG	None	Monitor relay status at 100 el. Relay Room
H-23 OPT Ø 2 TRBL	None	Monitor transformer local annunciator
H-25 H ₂ TEMP HI	None	Determine Machine Gas Temperature on TL-6685I on Panel 968
H-26 EMER SEAL OIL PRESS LO	None	If ESOP is running, verify pressure on PL-1823 on Seal Oil Skid
H-28 GEN EXC FLD GND	None	Monitor Red LED on Exciter Field Breaker Cubicle (out = ground)
H-29 VREG MISMATCH	2CC3: AUTO/MAN XFER DIFF OUT VOLTS meter indication	
H-30 UNIT ISOL TRIP BU	None	Monitor relay status at 100 el. Relay Room

ATTACHMENT 7

WINDOW BOX H

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
H-31 MPT Ø 3 TRBL	None	Monitor transformer local annunciator
H-33 H ₂ PRESS HI OR LO	2CC3: Bezel indicator PA-5131	
H-34 SEAL OIL ΔP LO	None	Monitor alarms on Panel 968
H-36 GEN LEADS TRBL	None	Monitor alarms on Panel 968
H-37 GEN STAT CLG WTR IN/OUT COND HI	None	Monitor alarms on Panel 968
H-38 GEN STAT RUNBACK	2CC3: Monitor MEGAWATT meter for indication of response to Runback	Monitor the following alarms at Panel 968: A-1L INLET FLOW LOW A-2L INLET PRESS LOW B-1L OUTLET TEMP HI D-3L RECTIFIER COOLANT LOW FLOW E-1L BUSHING COOLANT LOW FLOW
H-39 MPT OVREXC	None	Monitor relay status at 100 el. Relay Room
H-41 H ₂ PURITY LO	2CC3: Bezel indicator XA-5132	

ATTACHMENT 7

WINDOW BOX H

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
H-43 GEN LOSS OF PT SIGNAL	2CC3: Supervisory lights (three)	
H-44 GEN STAT COIL IN/OUT TEMP HI	None	Monitor the following alarms at Panel 968: A-3L INLET TEMP HIGH B-1L OUTLET TEMP HIGH
H-45 GEN STAT CLG SYS TRBL	None	Monitor all alarms at Panel 968
H-46 GEN STAT WTR FLOW/PRESS LO	None	Monitor the following alarms at Panel 968: A-1L INLET FLOW LOW A-2L INLET PRESS LOW
H-48 TRANSIENT DATA RCDR TRBL	None	Monitor Transient Data Recorder in the 100' Relay Room

ATTACHMENT 8

WINDOW BOX J

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
J-1 2A 4KV VTL BUS DIFF PROT	2CC3: BUS VOLTAGE indications 2RP6: Supervisory lights	
J-2 2B 4KV VTL BUS DIFF PROT	2CC3: BUS VOLTAGE indications 2RP6: Supervisory lights	
J-3 2C 4KV VTL BUS DIFF PROT	2CC3: BUS VOLTAGE indications 2RP6: Supervisory lights	
J-4 2A DG URGENT TRBL	2CC3: DIESEL GENERATOR bezel 2A TROUBLE	Monitor alarms on 2A DG Local Annunciator Panel
J-5 2H 4KV GRP BUS DIFF/OVRD	2CC3: BUS VOLTAGE indications 2RP6: Supervisory lights	

ATTACHMENT 8

WINDOW BOX J

E INDICATION(S)	COMPENSATORY ACTIONS
E indications hts	
E indications hts	
E indications hts	
E indications hts	
E indications hts	

ATTACHMENT 8

WINDOW BOX J

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
J-11 2C 4KV VTL BUS OVRLD	2CC3: BUS VOLTAGE indications 2RP6: Supervisory lights	
J-12 2B DG URGENT TRBL	2CC3: DIESEL GENERATOR bezel 2B TROUBLE	Monitor alarms on 2B DG Local Annunciator Panel
J-13 21HSD BKR FAIL	2CC3: Breaker indications 2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room
J-14 21ESD BKR FAIL	2CC3: Breaker indications 2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room
J-15 21FSD BKR FAIL	2CC3: Breaker indications 2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room

ATTACHMENT 8

WINDOW BOX J

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
J-16 21GSD BKR FAIL	2CC3: Breaker indications 2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room
J-17 2A VTL BUS UNDRVOLT	2CC3: BUS VOLTAGE indications	
J-18 2B VTL BUS UNDRVOLT	2CC3: BUS VOLTAGE indications	
J-19 2C VTL BUS UNDRVOLT	2CC3: BUS VOLTAGE indications	
J-20 2C DG URGENT TRBL	2CC3: DIESEL GENERATOR bezel 2C TROUBLE	Monitor alarms on 2C DG Local Annunciator Panel
J-21 2AHGD BKR FAIL	2CC3: Breaker indications	Monitor relay status at 100 el. Relay Room
J-22 2AEGD BKR FAIL	2CC3: Breaker indications 2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room

ATTACHMENT 8

WINDOW BOX J

	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
	2CC3: Breaker indications 2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room
	2CC3: Breaker indications 2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room
	2CC3: Breaker indications 2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room
	2CC3: Breaker indications 2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room
R	2CC3: Breaker indications 2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room

ATTACHMENT 8

WINDOW BOX J

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
J-28 FO DAY TK LVL TRBL	2CC3: DIESEL GENERATOR bezel TROUBLE	Determine Day Tank Levels (any one < 18" = alarm)
J-33 22ASD BKR FAIL	2CC3: Breaker indications 2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room
J-34 22BSD BKR FAIL	2CC3: Breaker indications 2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room
J-35 22CSD BKR FAIL	2CC3: Breaker indications 2RP6: Supervisory lights	Local operator to monitor relay status at 100 el. Relay Room
J-37 4KV GRP BUS UNDRFREQ	Aux Typewriter: Point Nos. 660, 665, 670, and 675	
J-38 4KV GRP BUS UNDRVOLT	Aux Typewriter: Point Nos. 663, 664, 673, and 674	
J-39 4KV GRP BUS XFER FAIL	2CC3: ISOLATION TRANSFER SUPV Bezel alarms (4 alarms)	

ATTACHMENT 8

WINDOW BOX J

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
J-41 2ADD BKR FAIL	2CC3: Breaker indications 2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room
J-42 2BDD BKR FAIL	2CC3: Breaker indications 2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room
J-43 2CDD BKR FAIL	2CC3: Breaker indications 2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room
J-45 TURB BLDG 460-230V BUS HOT SPOT	None	Monitor locally
J-46 AUX BLDG 460- 230V BUS HOT SPOT	None	Monitor locally

ATTACHMENT 10

WINDOW BOX K

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
K-3 13/4KV STA XFMR L/O RELAY TRIP	2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room
K-4 13KV L/O RELAY TRIP	2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room
K-5 500/13KV STA XFMR L/O RELAY TRIP	2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room
K-6 500KV RING L/O RELAY TRIP	2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room
K-7 500KV LN 31X REG/BU PILOT WIRE XFER TRIP	2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room
K-11 21 STA XFMR TRBL	2RP6: Supervisory lights	Monitor 21 Sta Xfmr parameters Monitor relay status at 100 el. Relay Room
K-12 13KV GND FAULT	2RP6: Supervisory lights	Monitor relay status at 100 el. Relay Room

ATTACHMENT 10

WINDOW BOX K

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
K-14 500KV BKR FAIL	2CC3: Breaker indications	Monitor relay status at 100 el. Relay Room
K-15 500KV LN 31X REG/BU POT FAIL	2RP6: PWT Regular and Backup circuit lights	
K-19 22 STA XFMR TRBL	Unit 1 OHA K-36 2RP6: Supervisory lights	Monitor 22 Sta Xfmr parameters Monitor relay status at 100 el. Relay Room
K-20 13KV BKR FAIL	2CC3: Breaker indications	Monitor relay status at 100 el. Relay Room
K-21 2 STA XFMR TRBL	2RP6: Supervisory lights	Monitor 2 Sta Xfmr parameters Monitor relay status at 100 el. Relay Room
K-22 500KV BKR TRBL	2RP6: Supervisory lights	Monitor the alarm panels at the following 500KV Breakers: 1-9 (32X) 2-10 (31X) 9-10 (30X)
K-36 12 STA XFMR L/O RELAY TRIP	Unit 1 OHA K-3 2RP6: Supervisory lights	Monitor 12 Sta Xfmr parameters Monitor relay status at 100 el. Relay Room

ATTACHMENT 10

WINDOW BOX K

WINDOW	ALTERNATE INDICATION(S)	COMPENSATORY ACTIONS
K-38 BS 1-9/9-10 500KV BRK FLASHOVER	2CC3: Supervisory lights	Monitor relay status at 100 el. Relay Room

S2.OP-AB.ANN-0001(Q)
LOSS OF OVERHEAD ANNUNCIATOR SYSTEM
TECHNICAL BASES DOCUMENT

1.0 REFERENCES

1.1 Technical Documents

A. Salem Generating Station Updated Final Safety Analysis Report:

1. Section 7.7.2.10

B. Artificial Island Emergency Plan

1. Alert 102S

C. Salem Station Event Classification Guide (ECG)

1. Section 10

2. Attachment 2

1.2 Procedures

A. S2.OP-AR.ZZ-0001(Q), Overhead Annunciator Window A

B. S2.OP-AR.ZZ-0002(Q), Overhead Annunciator Window B

C. S2.OP-AR.ZZ-0003(Q), Overhead Annunciator Window C

D. S2.OP-AR.ZZ-0004(Q), Overhead Annunciator Window D

E. S2.OP-AR.ZZ-0005(Q), Overhead Annunciator Window E

F. S2.OP-AR.ZZ-0007(Q), Overhead Annunciator Window G

G. S2.OP-AR.ZZ-0008(Q), Overhead Annunciator Window H

H. S2.OP-AR.ZZ-0009(Q), Overhead Annunciator Window J

I. S2.OP-AR.ZZ-0010(Q), Overhead Annunciator Window K

J. S2.OP-SO.ANN-0001(Q), Overhead Annunciator Operation

K. 2-EOP-TRIP-1, Reactor Trip or Safety Injection

1.3 Drawings

- A. Refer to individual OHA Alarm Response Procedures

1.4 Conformance Documents

- A. None

1.5 Industry Concerns

- A. NRC INFO 88-05 Fire in the Annunciator Control Cabinets

2.0 DISCUSSION

- 2.1 This procedure provides directions necessary to respond to a malfunction of the Overhead Annunciator (OHA) System. The design of the system is such that loss of a single window box is unlikely. Due to redundant power supplies, a total loss of power to the OHA System is also unlikely. This procedure is designed to provide the information necessary to deal with a total loss of annunciators.

It is the intent of this discussion to provide the reasoning behind the logic and flowpath of the procedure. It is not intended to provide additional direction to the procedure.

2.2 Entry Conditions

Entry into this procedure is based on the operator recognizing that a malfunction has occurred in the OHA System resulting in a total loss of annunciators.

2.3 Immediate Actions

None

2.4 Subsequent Actions

Step 3.1 directs the operator to trip the reactor if at any time the plant becomes unstable. With a loss of annunciators, the ability of the operator to diagnose plant conditions with the unit in an unstable condition becomes impeded. The intent of this direction is for the operator to place the unit in a known condition if it is determined that operator control of plant conditions is in jeopardy.

Step 3.2 directs evaluation of conditions/evolutions in progress which could result in alarms which would not be received due to failure of the Annunciator System. Depending on the status of the evolutions, it may be more desirable to allow these evolutions to continue rather than create transient conditions which would result in unreceived alarm conditions. The bases for determining actions in this step are at the discretion of the SNSS/NSS and is expected to be based on impact to plant stability and available means of alternate indications for alarms that may be affected by these evolutions.

Step 3.4 directs the operator to attempt to reset the OHA System. It is recognized that the cause of the loss of annunciators may be due to a loss of power and that this step will not restore power. However, due to redundancy of power supplies, this is an unlikely condition and performance of this step though unnecessary, will not result in adverse conditions. If this attempt is successful, then this procedure will be complete.

If reset is not successful (as would be the case for a total loss of annunciator power), then there is nothing the operator can do to restore the system, and help from Maintenance will be required (3.7).

While Maintenance is troubleshooting the problem, Steps 3.8 and 3.9 direct compensatory measures. These measures include increased frequency of monitoring plant parameters for indications of abnormal conditions. As an aid to the operator, Attachments 1 through 9 provide information for alternate indications that may be used to determine if an alarm condition is present. The approach to the structure of these Attachments was to provide a list of alternate indications readily available to the Control Board operator that would indicate that an alarm condition does not exist.

For example, for alternate indications of a low flow alarm, a flow meter may simply be listed. It is expected that the operator would determine a low flow alarm condition from a low flow condition. In the case where an alarm condition would be determined by the position of switches or light status, the normal (non-alarmed) state of the switch or status lights would be listed. Upon finding that an alarm condition exists, the operator will then use the Overhead Annunciator response procedure for the associated window concurrent with this procedure.

Each attachment is laid out by window group to allow for ease of use for only a portion of the windows.

Step 3.10 allows for plant load changes at a rate which should not present plant parameter changes that cannot be adequately monitored by operators to deter entry into alarm conditions.

Once the cause of the loss of annunciators has been determined and corrected, Step 3.11 directs system reset to restore it to a normal operating condition.

END OF DOCUMENT