

DOCUMENT TRANSMITTAL FORM 63233  
FOR DOCUMENTS TRANSMITTED TO DC DESK (NRC)\*

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DOCUMENT NUMBER	SHEET NUMBER	REVISION NUMBER	COPY NUMBER
AR 302		11	24
AR 304		08	24
AR 305		15	24
AR 504		09	24

INSTRUCTIONS TO THE ADDRESSEE

COMPLETE EACH OF THE INSTRUCTIONS BELOW WHICH ARE MARKED WITH AN " X "

- (1) VERIFY THE DOCUMENTS RECEIVED AGREE WITH THE ABOVE DESCRIPTION
- (2) INCORPORATE THE TRANSMITTED DOCUMENTS INTO YOUR FILES
- (3) DESTROY DOCUMENTS OR PORTIONS OF DOCUMENTS SUPERSEDED BY THE ABOVE
- (4) SIGN AND DATE IN THE SPACES BELOW INDICATING THAT YOU COMPLETED THESE INSTRUCTIONS.
- (5) SIGN BELOW INDICATING THAT YOU HAVE READ AND UNDERSTOOD THE CHANGES AS IDENTIFIED
- (6) RETURN TO DOCUMENT CONTROL, CRYSTAL RIVER UNIT 3, MAC# NA1C  
NR2A SA1G FLORIDA POWER CORP., P.O. BOX 219  
CRYSTAL RIVER FLA. 32623

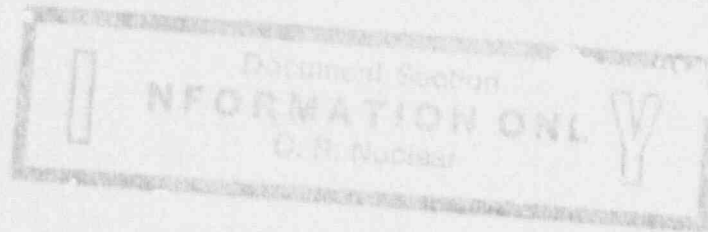
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Rev. 11 11/11/91

Effective Date 12/5/91



ANNUNCIATOR RESPONSE

AR-302

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

CSB ANNUNCIATOR RESPONSE

THIS PROCEDURE ADDRESSES SAFETY RELATED COMPONENTS

APPROVED BY: Interpretation Contact

*[Handwritten Signature]*

DATE: 12-5-91

INTERPRETATION CONTACT: Nuclear Operations Superintendent

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## 1.0 PURPOSE

- | 1.1 Establish a reference document for each Annunciator Window on the ES (A)-KW2 Lampbox.
- | 1.2 Establish operator actions for valid Annunciator alarms on the ES (A)-KW2 Lampbox.
- | 1.3 Establish a reference to other procedures which address operator actions for valid Annunciator alarms on the ES(A)-KW2 Lampbox.

## 2.0 REFERENCES

### 2.1 IMPLEMENTING REFERENCES

- | 2.1.1 AP-380 - Engineered Safeguards Actuation
- | 2.1.2 AP-770 - Emergency Diesel Generation Actuation

### 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-224-048

## 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 ES(A)-KW2 Lampbox as indicated on Enclosure 1, Annunciator Response.

## 5.0 FOLLOW-UP ACTIONS

- | None

ANNUNCIATOR PANEL LOCATION ES(A)-KW2ANNUNCIATOR PANEL BVERTICAL COLUMN 1

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
RB SPRAY ES A ACTUATION  B-1-1	1. a) RB press $\geq$ 30 psig. 2. a) RC press decrease rapidly. b) RB press. temp increase, possible RB radiation monitoring alarm. c) Decrease in steam generator press, rupture matrix actuation.	1. a) ES channel A sequence operation. 2. a) Insure ES A actuation. b) Refer to AP-380 (ESA).	$\geq$ 30 psig	6231/RB4, 785, RB6-
RB SPRAY PP A TRIP  B-1-2	1. a) Breaker open with control switch in normal after start position, breaker racked in. 2. a) RB spray flow high/low alarm. b) Low voltage on ES bus.	1. a) None. 2. a) If BSP B is not in operation, place B building spray system in operation if needed. b) Investigate reason for pump trip.		CS/SC CS/O
RB SPRAY PP A MOTOR OVERLOAD  B-1-3	1. a) Overload relay set at 115% rated load. 2. a) Possible excessive spray flow. b) Excessive BSP motor amps.	1. a) None. 2. a) Adjust flow to 1500 gpm or less. b) Check pump for proper operation. c) If condition is not corrected, secure BSP as soon as possible.		51
RB SPRAY PP A OUT OF SERVICE  B-1-4	1. a) Breaker racked out. b) Loss of DC control power. 2. a) No indicating lights on breaker control switch.	1. a) None. 2. a) On completion of maintenance, place breaker back in service. b) Investigate loss of DC control power.		52 H/B 27 C
RB SPRAY A FLOW HIGH/LOW  B-1-5	1. a) High RB spray flow of 1700 gpm or greater. b) ES actuation and RB spray flow $\leq$ 1400 gpm for 30 sec or more. c) RB spray flow $\geq$ 1300 gpm with DH from RB sump. d) RB spray flow $\leq$ 1100 gpm with DH from RB sump. 2. a) High or low BSP amperage. b) High or low RB spray flow indication.	1. a) None. 2. a) Check valve operation to insure proper flow path. b) Check BWST or RB sump level to insure supply of water for pump. c) Throttle BSV-3 to obtain proper flow rate.	$\geq$ 1700 gpm $\leq$ 1400 gpm  $\geq$ 1300 gpm $\leq$ 1100 gpm	85-1-F51
B-1-6				

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
RB FAN A HIGH SPEED TRIP  B-2-1	1. a) Control switch is normal after start position and breaker open. 2. a) Indicating light and control switch target mismatch. b) RB Fan 1A air flow low alarm. c) Increasing temp. in RB.	1. a) None. 2. a) Start non operating RB Fan. b) Determine cause of trip.		CS/SC CS/O (KC)
RB FAN A LOW SPEED TRIP  B-2-2	1. a) Control switch pulled out and in normal after start with breaker open. 2. a) Indicating light and control switch target mismatch. b) RB Fan 1A air flow low alarm. c) Increasing RB temp.	1. a) None. 2. a) Start non operating RB Fan. b) Determine cause of trip.		CS/SC CS/O (NO)
RB FAN A AIR FLOW LOW  B-2-3	1. a) Control switch in high speed normal after start position with low air flow. 2. a) RB Fan 1A high speed trip alarm. b) RB Fan 1A running in low speed with control switch in high speed normal after start. c) RB temperature increasing.	1. a) None. 2. a) Check fan control switch matches fan operating status. b) If condition can not be corrected, then secure RB fan 1A and determine cause of problem.		AH-17-DPS CS/SC CS/O
RB FAN A VIBRATION HIGH  B-2-4	1. a) 3AH-18-ME vibration switch closed. 2. a) None.	1. a) None. 2. a) Push vib. reset push button for RB Fan 1A. b) Check fan for increased vibrating noise. c) If Vib. alarm won't reset, stop RB fan 1A.		
RB FAN A CONDENSATE HIGH  B-2-5	1. a) AHF-1A condensate flow >1133 cc/min. 2. a) None.	1. a) None. 2. a) Determine if source and amount of condensate is abnormal or unusual.	1133 cc/min	AH-656-FIS
COLD LEG A NOZZLE DAM PROBLEM  B-2-5*	1. a) Nozzle Dam pressure high. b) Nozzle Dam pressure low. c) Nozzle Dam air flow low. d) Nozzle Dam air flow high. e) Nozzle Dam power failure. 2. a) None.	1. a) None. 2. a) Determine problem utilizing Local Nozzle Dam Monitor.		
ES A ACTUATION TROUBLE  B-2-6	1. a) ES signal on one or more channels. 2. a) Low RC pressure. b) High RB pressure.	1. a) None. 2. a) Verify condition, if valid follow appropriate EP or AP for condition. b) If not valid alarm, notify Elec. Supv.		ALARM MATRIX

\*Temporary window in lieu of B-2-5 when nozzle dams are installed per THAR-89-10-19-02.

ANNUNCIATOR PANEL LOCATION ES(A)-KW2ANNUNCIATOR PANEL BVERTICAL COLUMN 3

WINDOW TITLE

1. INDICATED CONDITION
2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE

1. AUTO ACTION
2. OPERATOR ACTION - VALID ALARM

SETPOINT

SENSING  
ELEMENT  
NUMBER &  
LOCATION

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
RB FAN C HIGH SPEED TRIP  B-3-1	<ol style="list-style-type: none"> <li>1. a) Control switch in normal after start position and breaker open.</li> <li>2. a) Indicating light and control switch target mismatch. b) RB Fan 1C air flow low alarm. c) Increasing temp in RB.</li> </ol>	<ol style="list-style-type: none"> <li>1. a) None.</li> <li>2. a) Start non operating RB Fan. b) Determine cause of trip.</li> </ol>		CS/SC CS/O (NC)
RB FAN C LOW SPEED TRIP  B-3-2	<ol style="list-style-type: none"> <li>1. a) Control switch pulled out and in normal after start with breaker open.</li> <li>2. a) Indicating light and control switch target mismatch. b) RB Fan 1C air flow low alarm. c) Increasing RB temp.</li> </ol>	<ol style="list-style-type: none"> <li>1. a) None.</li> <li>2. a) Start non operating RB Fan. b) Determine cause of trip.</li> </ol>		CS/SC CS/O (NO)
RB FAN C AIR FLOW LOW  B-3-3	<ol style="list-style-type: none"> <li>1. a) Control switch in high speed normal after start position with low air flow.</li> <li>2. a) RB Fan 1C high speed trip alarm. b) RB Fan 1C running in low speed with control switch in high speed normal after start. c) RB temperature increasing.</li> </ol>	<ol style="list-style-type: none"> <li>1. a) None.</li> <li>2. a) Check fan control switch matches fan operating status. b) If condition can not be corrected, then secure RB Fan 1C and determine cause of problem.</li> </ol>		AH-Z1-DPS
RB FAN C VIBRATION HIGH  B-3-4	<ol style="list-style-type: none"> <li>1. a) 3AH-22-Mc vibration switch closed.</li> <li>2. a) None.</li> </ol>	<ol style="list-style-type: none"> <li>1. a) None.</li> <li>2. a) Push vibration reset push button for RB Fan 1C. b) Check fan for increased vibrating noise. c) If vibration alarm won't reset stop RB Fan 1C.</li> </ol>		3AH-22-ME
RB FAN C CONDENSATE HIGH  B-3-5	<ol style="list-style-type: none"> <li>1. a) AHF-1C condensate flow &gt; 1133 cc/min.</li> <li>2. a) None.</li> </ol>	<ol style="list-style-type: none"> <li>1. a) None.</li> <li>2. a) Determine if source and amount of condensate is abnormal or unusual.</li> </ol>	1133 cc/min	AHF-658-FIS
RB FAN C POWER SUPPLY MISALIGN  B-3-6	<ol style="list-style-type: none"> <li>1. a) RB Fan C selected as ESA Fan and ES-MCC-3AB selected to ESB. b) RB Fan C selected as ESB Fan and ES-MCC-3AB selected to ESA.</li> <li>2. a) ES-MCC-3AB power source status lamp. b) Position of selector switches located in ES Actuation Relay Cabinets 4D and 5D.</li> </ol>	<ol style="list-style-type: none"> <li>1. a) None.</li> <li>2. a) Make proper alignment of ES RB Fans.</li> </ol>		

ANNUNCIATOR PANEL LOCATION ES(A)-KW2ANNUNCIATOR PANEL BVERTICAL COLUMN 4

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPPOINT	SENSING ELEMENT NUMBER & LOCATION
MAKEUP PP A TRIP  B-4-1	1. a) MUP A control switch is normal after start position and breaker open, breaker racked in. 2. a) Low bus voltage. b) Low flow indication.	1. a) None. 2. a) Start another MUP. b) Notify electrical supervisor of breaker trip.		CS/SC CS/O 52 H/A 52 S/B
MAKEUP PP A GEAR OIL PRESS LOW  B-4-2	1. a) MUP A breaker closed and gear oil press < 7 psi for > 20 sec. 2. a) None.	1. a) Auto start BU GOP. 2. a) Verify oil level in speed increaser. b) Shift to alternate MUP if possible.	7 psig	2 MUP-5A MU-88-PS
MAKEUP PP A MOTOR OVERLOAD  B-4-3	1. a) Over current time delay relay trip at 115% rated power. 2. a) Makeup flow high alarm. b) HPI flow high/low alarm.	1. a) None. 2. a) Reduce flow from MUP A if possible. b) Start another MUP.	115%	51
MAKEUP PP A LUBE OIL PUMP TRIP  B-4-4	1. a) MUP A backup lube oil pump in normal after start and starting solenoid not energized. b) MUP A main lube oil pump control switch in normal after start and main lube oil pump not running. 2. a) Backup lube oil pump auto start.	1. a) Auto start backup lube oil pump at 3 psi lube oil press. 2. a) Check thermal overload on main LOP. b) Check level in main LO sump. c) Check for sufficient bearing flow on MUP A.		CS/SC CS/O (42B) (CR1)
B-4-5				
AUX STM ISO (ASV-195) BYPASSED  B-4-6	1. a) Automatic Closure of ASV-195 is defeated. 2. a) Bypass switch on ES Control Panel.	1. a) None. 2. a) Return bypass switch to normal if bypass not required.	N/A	Control Switch



ANNUNCIATOR PANEL LOCATION ES(A)-KW2ANNUNCIATOR PANEL BVERTICAL COLUMN 5

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
B-5-1				
MAKEUP PP A LUBE OIL PRESS LOW  B-5-2	1. a) MUP A lube oil header press < 3 psig. 2. a) MUP A LOP auto start alarm.	1. a) Backup lube oil pump starts. 2. a) If BU LOP did not auto start, start BU LOP. b) If alarm does not clear start backup MUP, secure MUP A. c) Check main lube oil sump level.	≤ 3 psig	MU-42-PS3
MAKEUP PP A LUBE OIL PUMP AUTO START  B-5-3	1. a) MUP A backup LOP control switch in normal after stop and backup LOP running. 2. a) MUP A lube oil pump trip alarm.	1. a) Auto start backup LOP. 2. a) Check main LO sump level. b) Check main LOP for thermal overload notify electrical supervisor.	3 psig	CS/ST CS/O (CR1)
MAKEUP PP A OUT OF SERVICE  B-5-4	1. a) Breaker racked out. b) Loss of DC control power. c) ES standby selector switch not selected to A. 2. a) No indicating light on breaker control switch.	1. a) None. 2. a) Check position of ES standby selector switch. b) If maintenance is complete place breaker in service as soon as possible. c) Investigate loss of DC control power.		27 C 43/3A 52 H/B
B-5-5				
AUX STM ISO (ASV-195) AUTO CLOSED  B-5-6	1. a) ASV-195 Closed. b) Possible AUX Steam leak in AUX Bldg. 2. a) AUX Steam line break alarm. b) ASV-195 Control Switch.	1. a) ASV-195 Closes. 2. a) Notify AND to Investigate.	100 psig ± 2% (Decrease) 250 psig (Increase)	AS-036-PS1/ PS2 AS-036-PS3

ANNUNCIATOR PANEL LOCATION ES(A)-KW2ANNUNCIATOR PANEL BVERTICAL COLUMN 6

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
MAKEUP PP B TRIP  B-6-1	1. a) MUP B control switch in normal after start pos and breaker open, breaker racked in. 2. a) Low bus voltage. b) Low flow indication.	1. a) None. 2. a) Start another MUP. b) Notify electrical supervisor of breaker trip.		CS/SC CS/O (52 H/B) (52 S/B)
MAKEUP PP B GEAR OIL PRESS LOW  B-6-2	1. a) MUP B breaker closed and gear oil press < 7 psi for > 20 sec. 2. a) None.	1. a) Auto start BU GOP. 2. a) Verify oil level in speed increaser. b) Shift to alternate MUP if possible.	7 psig	2 MUP-5B
MAKEUP PP B MOTOR OVERLOAD  B-6-3	1. a) Over current time delay relay trip at 115% rated power. 2. a) Makeup flow high alarm. b) HPI flow high/low alarm.	1. a) None. 2. a) Reduce flow from MUP B if possible. b) Start another MUP.		51
MAKEUP PP B LUBE OIL PUMP TRIP  B-6-4	1. a) MUP B BU LOP in normal after start and starting solenoid not energized. b) MUP B main LOP control switch in normal after start and main LOP not running. 2. a) Backup LOP auto start.	1. a) Auto start BU LOP at 3 psi lube oil press. 2. a) Check thermal overload on main LOP. b) Check level in main LOP sump. c) Check for sufficient bearing flow on MUP B.		CS/SC CS/O (42B) (CR1)
B-6-5				
B-6-6				

ANNUNCIATOR PANEL LOCATION ES(A)-KW2ANNUNCIATOR PANEL BVERTICAL COLUMN 7

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
B-7-1				
MAKEUP PP B LUBE OIL PRESS LOW	1. a) MUP B LO header press < 3 psig. 2. a) MUP B LOP auto start alarm.	1. a) BU LOP starts. 2. a) If BU LOP did not auto start, start BU LOP. b) If alarm does not clear start backup MUP and secure MUP B. c) Check main lube oil sump level.	3 psig	MU-45-PS3
B-7-2				
MAKEUP PP B LUBE OIL PUMP AUTO START	1. a) MUP B backup LOP control switch is normal after stop and backup LOP running. 2. a) MU pump A lube oil pump trip alarm.	1. a) None. 2. a) Check main lube oil sump level. b) Check main LOP for thermal overload notify electrical supervisor.		CS/ST CS/O (CR1)
B-7-3				
MAKEUP PP B OUT OF SERVICE	1. a) MUP B breaker rackout. b) Loss of DC control power. c) ES standby selector switch not selected to B. 2. a) No indicating light on breaker control switch.	1. a) None. 2. a) Check position of ES standby selector switch. b) If maintenance is complete place breaker back in service as soon as possible. c) Investigate loss of DC control power.		27 C 43/3B 52 H/B
B-7-4				
B-7-5				
H <sub>2</sub> SAMPLING PANEL A TROUBLE	1. a) Pass RB H <sub>2</sub> analyzer malfunction due to 1. Flow $\leq 1.0$ SCFH $\pm 0.2$ . 2. Pressure $\leq 4.0$ psi $\pm 0.5$ psi. 3. Thermo elec cooler temp $\leq 0.1$ amps. b) Hi-percent H <sub>2</sub> $\geq 3\% + 0.25\%$ . 2. a) RB isolation valves status indication.	1. a) None. 2. a) Notify Chemistry.	1.0 SCFH $\pm 0.2$ 4.0 psi $\pm 0.5$ 0.1 Amps 3% $\pm 0.25\%$	FLOW SW PRESS SW TEMP SW
B-7-6				

ANNUNCIATOR PANEL LOCATION ES(A)-KW2ANNUNCIATOR PANEL BVERTICAL COLUMN 8

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
DIESEL GEN A FAILED TO START  B-8-1	1. a) Diff current relay & A, B or C. b) Diesel A speed less than 250 rpm 7 sec. after start signal. c) Lube oil press less than 6 psig 7 sec. after start signal. 2. a) Breaker 3209 trip. b) Diesel A trip. c) Diesel A trouble alarm. d) No machine voltage or current indication.	1. a) Open excitation circuit. b) Blocks any start signals. 2. a) Notify electrical supervisor for investigation of problem. b) Check diesel support systems for malfunction. c) Reset shutdown relay if required. d) Refer to AP-770 (EDGA).		86 DG 3A  LOCAL ANNUN.
DIESEL GEN A TROUBLE  B-8-2	1. a) Any alarm from Diesel Gen A local annunciator see note B-8-2. b) Lube Oil Temperature < 110°F OR Jacket Water < 115°F. 2. a) Possible engine shutdown. b) Possible generator breaker trip.	1. a) Possible engine shutdown. b) Possible generator breaker trip. 2. a) Investigate local alarm panel. b) Verify condition in alarm and correct.	110°F  115°F	LOCAL ANNUN.  AUX RELAY OTL
DIESEL GEN A OUT OF SERVICE  B-8-3	1. a) Starting air pressure < 225 psig. b) Any of a number of switches for Diesel out of position, see note B-8-3. c) Loss of DC Control Power. 2. a) None.	1. a) None. 2. a) Check for air leaks. b) Open EGV 25 & 26, tie line to B diesel air system. c) Investigate cause of low air press and correct. d) Check switches listed in note B-8-3 and return to their proper positions if conditions permit. e) Check control power indicating lights on diesel. f) Check DPDP-6A, breaker 12. g) Notify Electrical Supervisor for investigation of problem.	225 psig	LOCAL ANNUN.
CF TANK A LEVEL HIGH/LOW  B-8-4	1. a) High core flood tank A level 13.25 ft. b) Low core flood tank A level 12.75 ft. 2. a) Visual indication on CF tank level. b) Low or high core flood tank pressure alarm.	1. a) None. 2. a) Determine cause and return system to normal.	>13.25 ft. <12.75 ft.	CF-2-LS1 CF-2-LS2
CF TANK A PRESS HIGH/LOW  B-8-5	1. a) High CF tank A pressure > 615 psig. b) Low CF tank A pressure < 585 psig. 2. a) Visual indication on CF tank A pressure gauge. b) Low or high CF tank level.	1. a) None. 2. a) Determine cause and return system to normal.	> 615 psig < 585 psig	CF-1-PS1 CF-1-PS2
CF TANK A DISCH VALVE OPEN/CLOSED B-8-6	1. a) CFV 5 not closed and RC press < 700 psig. b) CFV 5 not open and RC press > 715 psig. 2. a) CFV 5 not in correct position.	1. a) None. 2. a) Correct position of CFV 5.	< 700 psig > 715 psig	33c RC-3A-PS3

ANNUNCIATOR  
PANEL  
LOCATION

NOTES

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- B-8-2 1. a) If there is no engine shutdown signal present and:
1. If > 810 RPM for > 20 seconds or;
  2. If UPR lube oil header press is > 18# or coolant press > 12# for > 20 seconds.
- And any of the following:
- a) Any UPR lube oil header press switch is < 16#.
  - b) Any crankcase press switch is > 0.6" H<sub>2</sub>O.
  - c) Coolant press is < 9#.
  - d) Fuel Oil header press is < 10#.
- b) If > 250 RPM for > 20 seconds and:
1. Governor is NOT at high limit and;
  2. UPR lube oil header press is < 6#.
- c) Any of the following:
- a) Governor overspeed at 990-1010 RPM.
  - b) Lube oil sump temp < 90°F.
  - c) Lube oil sump level < 9 3/16".
  - d) Coolant expansion tank level < 14 gal.
  - e) Coolant temp > 195°F.
  - f) Manual air start shutoff valve not fully open.
  - g) FODT lo level > 24" from the top of the tank.
  - h) FODT hi level < 13.5" from the top of the tank.
  - i) DC fuel oil transfer pump running-will run when:
    1. Control switch in manual.
    2. Control switch in auto and FODT level between 15" and 22".
  - j) Loss of gen field.
  - k) Gen field ground.
  - l) Gen stator high temp.

ANNUNCIATOR  
PANEL  
LOCATION

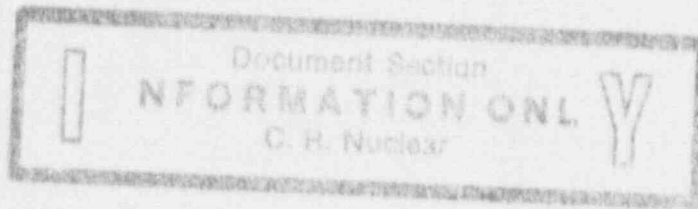
NOTES

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- B-8-3     ?     a) A diesel local control switch "normal-at-engine" in "at engine" position.
- b) A diesel "jacket coolant pump" control switch in "off" or "manual" position.
- c) A diesel jacket coolant heater selector switch in "off" position.
- d) A diesel "standby circ pump" (lube oil) control switch in the "manual" or "off" position.
- e) A diesel "DC fuel oil aux. pump" A control switch in "off" or "manual" position.
- f) A diesel "DC fuel oil transfer pump" A control switch in "off" or "manual" position.
- g) A diesel "AC fuel oil transfer pump" A control switch in "off" or "manual" position.
- h) A diesel "AC air compressor motor" A control switch in the "off" or "manual" position.
- i) A diesel "auto-manual" selector switch in the control room is in the "manual" position.

Rev. 8 11/21/91

Effective Date

12/5/91



ANNUNCIATOR RESPONSE

AR-304

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

ESD ANNUNCIATOR RESPONSE

THIS PROCEDURE ADDRESSES SAFETY RELATED COMPONENTS

APPROVED BY: Interpretation Contact

*Charles G. Wil Marshall*

DATE:

12-5-91

INTERPRETATION CONTACT: Nuclear Operations  
Superintendent

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 <u>ENCLOSURES</u>		
1	Annunciator Response . . . . .	3



## 1.0 PURPOSE

- 1.1 Establish a reference document for each Annunciator Window on the ES (B)-JHI Lampbox.
- 1.2 Establish operator actions for valid Annunciator alarms on the ES (B)-JHI Lampbox.
- 1.3 Establish a reference to other procedures which address operator actions for valid Annunciator alarms on the ES(B)-JHI Lampbox.

## 2.0 REFERENCES

### 2.1 IMPLEMENTING REFERENCES

- 2.1.1 AP-380 - Engineered Safeguards Actuation
- 2.1.2 OP-404 - Decay Heat Removal System
- 2.1.3 AP-560 - Loss of Decay Heat Removal
- 2.1.4 OP-209 - Plant Cooldown
- 2.1.5 EP-290 - Inadequate Core Cooling

### 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-224-048

## 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 ES(B)-JHI Lampbox as indicated on Enclosure 1, Annunciator Response.

5.0 FOLLOW-UP ACTIONS

None

ANNUNCIATOR PANEL LOCATION ES(B)-JH1ANNUNCIATOR PANEL DVERTICAL COLUMN 1

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
HPI ES B ACTUATION  D-1-1	1. a) Low RC pressure $\leq$ 1500 psig. b) High RB pressure $\geq$ 4 psig. c) Lo-Lo RC Pressure $\leq$ 500 psig. d) Manual HPI Actuation B. 2. a) Low RC Pressure alarm/indication. b) Pressurizer level rapidly decreasing. c) Inc. RB temp., press, and possible radiation alarm.	1. a) ES HPI channel B sequence operation. 2. a) Ensure proper ES actuation. b) Refer to AP-380 (ESA).	<1500 psig   4 psig   500 psig	
LOAD SEQUENCE BLOCK 2 ACTUATION B  D-1-2	1. a) When either RC1, RC2, or RC3 five sec time delay relay is energized. 2. a) ES channel status indication.	1. a) RWP 2B auto start if two channels actuate. b) AHF 1B or 1C auto start in slow speed if two channels actuate. 2. a) Check equipment for proper operation.		
LOAD SEQUENCE BLOCK 3 ACTUATION B  D-1-3	1. a) When either RC1, RC2, or RC3 ten sec time delay relay is energized. 2. a) ES channel status indication.	1. a) SWP 1B auto start if two channels actuate. b) AHF-15B auto start if two channels actuate. 2. a) Check equipment for proper operation.		
LOAD SEQUENCE BLOCK 4 ACTUATION B  D-1-4	1. a) When either RC1, RC2, or RC3 fifteen sec time delay relay is energized. 2. a) ES channel status indication.	1. a) DHP-1B auto start if two channels actuate and RCS Press < 500 PSIG. 2. a) Check equipment for proper operation. b) HPI seal in must be reset for alarm to return to normal.		
LOAD SEQUENCE BLOCK 5 ACTUATION B  D-1-5	1. a) When either RC1, RC2, or RC3 twenty sec time delay relay is energized. 2. a) ES channel status indication.	1. a) RWP-3B auto start if two channels actuate 2. a) Check equipment for proper operation.		
LOAD SEQUENCE BLOCK 6 ACTUATION B  D-1-6	1. a) When either RC1, RC2, or RC3 twenty five sec time delay relay is energized. 2. a) ES channel status indication.	1. a) DCP-1B auto start if two channels actuate. b) BSP 1B auto start if two channels actuate and RB Press > 30 PSIG. 2. a) Check equipment for proper operation. b) HPI seal in must be reset for alarm to return to normal.		

ANNUNCIATOR PANEL LOCATION ES(B)-JH1ANNUNCIATOR PANEL DVERTICAL COLUMN 2

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
DIVERSE CONTAINMENT ISOLATION B  D-2-1	1. a) ES B Components go to HPI Status. 2. a) RCS Pressure $\leq$ 1500 psig.	1. a) Note D-2-1. 2. a) Refer to AP-380 (ESA).	$\leq$ 1500 psig	
HPI B FLOW HIGH/LOW  D-2-2	1. a) HPI actuation B and HPI flow to Loop B-1 or B-2 $>$ 263 gpm or $<$ 75 gpm. 2. a) Motor overload on MUP. b) Fluctuation on MUP motor amps. c) Failure of MUP to start.	1. a) None. 2. a) Ensure proper flow path for MUP. b) Start backup MUP if required. c) If MUP runout is occurring throttle pump discharge valve.	$>$ 263 gpm $>$ 263 gpm $<$ 75 gpm $<$ 75 gpm	MU-23-FS1 MU-23-FS3
LPI (DHW-6) OPEN  D-2-3	1. a) RC press $>$ 200 psig and DHW 6 open. 2. a) DHW 6 open. b) RC press $>$ 200 psig.	1. a) None. 2. a) Close DHW 6 or reduce RC press to less than 284 psig.	200 psig	RC-3A-PS4 33 AC
LPI B FLOW HIGH/LOW  D-2-4	1. a) High DHP-B discharge flow $\geq$ 3750 gpm. b) LPI ES B actuation signal and DHP-B flow $<$ 2800 gpm for greater than 5 seconds. 2. a) DHP-B motor overload, tripped or out of service. b) DHP-B motor amps high or fluctuating.	1. a) None. 2. a) Ensure DHP-A (LPI mode) operating. b) Check for complete LPI flow path. c) Attempt to start DHP-B with control switch.	$>$ 3750 gpm $<$ 2800 gpm ( $>$ 5 sec.)	DH-1-FS2
ES B ACTUATION NOT BYPASSED  D-2-5	1. a) RC press less than 1640 psig and HPI not bypassed. b) RC press less than 750 psig and LPI not bypassed. 2. a) None.	1. a) None. 2. a) Bypass HPI or LPI.	750 psig 1640 psig	62 B
ES B ACTUATION NOT RESET  D-2-6	1. a) Any LPI channel bypassed and RC press $>$ 750 psig. b) Any HPI channel bypassed and RC press $>$ 1640 psig. a) None.	1. a) None. 2. a) Reset LPI or HPI.	750 psig 1640 psig	RC-3A-PS6 RC-3A-PS5 B Matrix

ANNUNCIATOR PANEL LOCATION ES(B)-JH1ANNUNCIATOR PANEL 0VERTICAL COLUMN 3

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
LPI ES B ACTUATION  D-3-1	1. a) RC pressure $\leq$ 500 psig. b) RB pressure $\geq$ 4 psig. c) Manual LPI Actuation B. 2. a) Decreasing RC pressure. b) Increasing RB press or temp. c) Loss of RC.	1. a) ES LPI B actuation. b) ES HPI B sequence operation. c) RB isolation at 4 psig increasing RB press. 2. a) Ensure ES actuation. b) Monitor pressurizer level & RC press. c) Refer to AP-360 (ESA).	$\leq$ 500 psig $\geq$ 4 psig	
DH PUMP B TRIP  D-3-2	1. a) Breaker control switch in normal after start, breaker open, breaker racked in. 2. a) Mismatch of switch target. b) DH low flow alarm.	1. a) None. 2. a) Investigate cause prior to re-starting DHP-1B or starting DHP-1A; e.g. proper suction valve alignment and RCS/vessel level; b) Place DH system 'A' in service, refer to OP-404 Section 4.6; c) For electrical concerns notify Electrical Supervisor; d) Refer to AP-360 (LDHR).		CS/SC CS/O
DH PUMP B MOTOR OVERLOAD  D-3-3	1. a) Overload relay trip at 115% rated load. 2. a) Motor high amps. b) Possible DH high/low flow alarm.	1. a) None. 2. a) Reduce load on motor by throttling discharge valve. b) If load is still high trip pump, place alternate DH system in operation.	115%	51
DH PUMP B OUT OF SERVICE  D-3-4	1. a) DHP B breaker pulled. b) DHP B loss of DC control power. 2. a) No indicating light on breaker control switch.	1. a) None. 2. a) This condition should exist only for maintenance and should be corrected as soon as possible. b) Investigate loss of DC control power.		52H/B 27 C
DH PUMP B SUCTION TEMP HIGH  D-3-5	1. a) Suction temp $\geq$ 280°. 2. a) Loss of DC flow.	1. a) None. 2. a) Increase cooling water to DH heat exchanger by increasing set point. b) If alarm does not clear shortly, refer to OP-209, Plant Cooldown, to remove heat via OTSG. c) Refer to AP-360 (LDHR).	280° F	DH-6-TS2
DH PUMP B FLOW LOW  D-3-6	1. a) DHP B control switch in normal after start and DHP B discharge is less than 1500 gpm. 2. a) DHP B motor amps cycling. b) Loss of level in RWST. c) DHP B tripped.	1. a) None. 2. a) Increase flow via DHV 111. b) If RWST level lost, switch suction to RB sump. c) Ensure proper flow path. d) Refer to AP-360 (LDHR).	$\leq$ 1500 gpm	DH-1-FS4

ANNUNCIATOR PANEL LOCATION ES(B)-JH1ANNUNCIATOR PANEL DVERTICAL COLUMN 4

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
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D-4-1				
DC PUMP B TRIP	1. a) Breaker control switch in normal after start, breaker racked in. 2. a) Low bus voltage	1. a) None. 2. a) Place A DH system in operation if in DH removal operation. b) Investigate cause of pump trip and notify electrical supervisor. Refer to AP-360 (LDHR).		CS/SC CS/O
D-4-2				
DC PUMP B MOTOR OVERLOAD	1. a) Overload relay alarm set at 115% rated power. 2. a) High motor amps. b) Excessive flow.	1. a) None. 2. a) Reduce flow by throttling DCV-4 pump discharge valve. b) If overload condition cannot be corrected secure pump. c) Ensure air handling units are in operation.		49 X
D-4-3				
DC PUMP B OUT OF SERVICE	1. a) Breaker racked out. b) No breaker DC control power. 2. a) No indicating lights on control switch.	1. a) None. 2. a) When reason for pump being out of service is corrected, place pump back in service as soon as possible. b) Investigate loss of DC control power.		B/P 27 C
D-4-4				
DC PUMP B DISCH PRESS LOW	1. a) DCP B discharge press is less than 30 psig 2. a) Excessive pump amps. b) Low surge tank level.	1. a) None. 2. a) Check surge tank level and restore to normal. b) Refer to AP-360 (LDHR)	30 psig	DC-56-PS R/A Timer
D-4-5				
DC TANK B LEVEL HIGH/LOW	1. a) High level at 11' 4". b) Low level at 8' 6". 2. a) Surge tank level change. b) Possible radiation monitor alarm.	1. a) Makeup valve DCV-12 opens at 8' 6" and closes at 11' 3". 2. a) Ensure proper operation of DCV-12. b) If DCV-12 fails to operate properly, secure fill on high alarm by shutting DCV-60, if low level, manually fill surge tank. c) If leak is suspected investigate probable cause & correct.	11' 4" 8' 6"	DC-52-LS
D-4-6				

ANNUNCIATOR PANEL LOCATION CS(B)-JH1ANNUNCIATOR PANEL DVERTICAL COLUMN 5

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
RC LOOP B VENT VLVS OPEN  D-5-1	1. a) RCV-163 or RCV-164 open. 2. a) Control switch lights. b) Flow indicator light.	1. a) None. 2. a) Refer to EP-290 (ICC) and AP-380 (ESA). b) Close valves if not required to be <u>open</u> .	OPEN	CONTROL SWITCH
D-5-2				
AH FAN 15B TROUBLE  D-5-3	1. a) AHF 15B control switch in normal after start and breaker open. b) AHF 15B in normal after start and decreased air flow. c) Duct Temp $\geq 135^{\circ}\text{F}$ . 2. a) Possible loss of temp permit on AHF 15B. b) AHF 15B tripped. c) DHCC AH 3B trip alarm. d) DHCC AH 3B air flow low alarm. e) Temp permissive light for AHF 15B out, DHCC AH B air flow low alarm.	1. a) AHF 15B trip. 2. a) Determine cause of alarm and correct.	1058" H <sub>2</sub> O  135 <sup>o</sup> F	CS/SC CS/O  AH-408-DPS 3AH-410-TS
D-5-4				
DC PUMP B SUCTION TEMP HIGH  D-5-5	1. a) High temp of 105 <sup>o</sup> increasing. 2. a) Loss of seawater cooling. b) Increasing DC temperature.	1. a) None. 2. a) Check seawater $\Delta T$ on heat exchanger to insure proper operation. b) Refer to AP-360 (LDHR).	105 <sup>o</sup>	DC-58-TS
BS/DH PUMP B DC FLOW LOW  D-5-6	1. a) DHP B motor DC flow low $\leq 24$ gpm. b) BSP B motor DC flow low $\leq 20$ gpm. 2. a) DCP B off. b) Low discharge pressure of DCP 3.	1. a) None. 2. a) Monitor DHP and BSP motor winding temp if running and secure DHP when temp exceeds 265 <sup>o</sup> F or BSP when temp exceeds 300 <sup>o</sup> F. b) Attempt to restore DC flow to DHP or BSP as soon as possible. Refer to AP-360 (LDHR).	1. $\leq 24$ gpm 2. $\leq 20$ gpm	DC-68-FIS DC-74-FIS

ANNUNCIATOR PANEL LOCATION ES(B)-JH1

ANNUNCIATOR PANEL 0

VERTICAL COLUMN 6

WINDOW TITLE	1. INDICATED CONDITION	1. AUTO ACTION	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
	2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	2. OPERATOR ACTION - VALID ALARM		

WINDOW TITLE	1. INDICATED CONDITION	1. AUTO ACTION	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
D-6-1				
DH RW PUMP B TRIP	1. a) Breaker tripped with control switch in normal after start position, breaker racked in. b) Under voltage on ES 4160 Bus B.	1. a) None. 2. a) If B DH system is in operation, transfer to A DH system and secure B DC system until reason for seawater pump trip is found and corrected. b) Refer to AP-360 (LDHR).		CS/SC
D-6-2				
DH RW PUMP B MOTOR OVERLOAD	1. a) HI current to pump motor. 2. a) HI amps on pump. b) Low discharge pressure.	1. a) None. 2. a) Check intake water level and screens. b) Wash screens if needed. c) Secure pump if overload continues.		51
D-6-3				
DH RW PUMP B OUT OF SERVICE	1. a) Breaker racked out. b) DC control power lost. 2. a) No indicating light on breaker control switch.	1. a) None. 2. a) If maintenance is not being performed, check pump discharge valves and place breaker back in service. b) Investigate loss of DC control power.		27 C 52 H/B
D-6-4				
DH RW PUMP B DISCH PRESS LOW	1. a) Breaker closed and decreasing pressure at 15 psig. 2. a) Decreasing pressure.	1. a) None. 2. a) Check intake water level & screens. b) Wash screens if needed. c) Refer to AP-360 (LDHR).	15 psig	RW-61-PS 52 S/A
D-6-5				
D-6-6				



ANNUNCIATOR PANEL LOCATION ES(B)-JH1ANNUNCIATOR PANEL DVERTICAL COLUMN 7

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
RB ISOLATION ES B ACTUATION  D-7-1	1. a) RB press 4 psig increasing. b) Manual RB Isolation Actuation B. 2. a) Increasing RB press. b) Decreasing RC press. c) Increasing RB temp.	1. a) RB isolation. b) HP injection. c) LP injection. 2. a) Insure auto ES actuation. b) Refer to AP-38G (ESA).	≥ 4 psig	6321/RB1 RB2, RB3
SW PUMP B TRIP  D-7-2	1. a) Breaker op'n and control switch in normal after start, breaker racked in. 2. a) Low system press alarm. b) Low ES bus voltage.	1. a) Alternate pump will start at 110 psig decreasing press. 2. a) Check auto start of SWP 1A. b) If SWP 1A did not auto start, start SWP 1A or 1C.		CS/SC CS/O
SW PUMP B MOTOR OVERLOAD  D-7-3	1. a) Overload relay alarms at 115% rated power. 2. a) Hi motor amps. b) Low SW press.	1. a) None. 2. a) Start SWP 1A or 1C and secure SWP 1B. b) Check SWP 1B and correct trouble.	115%	51
SW PUMP B OUT OF SERVICE  D-7-4	1. a) Breaker racked out. b) Loss of DC control power. 2. a) No indicating light on breaker control switch.	1. a) None. 2. a) When maintenance is complete, return breaker to service as soon as possible. b) Investigate loss of DC control power.		52 H/B 27 C
SW PUMP B AUTO START  D-7-5	1. a) Auto start from low SW header pressure of 110 psig. b) Auto start from ES signal. 2. a) Decreasing system press. b) Possible SW pump trip alarm.	1. a) Auto start of SWP 1B. 2. a) Ensure SW header pressure increases to normal. b) Investigate cause of auto start of SWP.	110 psig	CS/SC CS/O
D-7-6				

ANNUNCIATOR PANEL LOCATION ES(B)-JH1ANNUNCIATOR PANEL DVERTICAL COLUMN 8

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
D-8-1				
SW RW PUMP B TRIP	1. a) Breaker control switch in normal after start position with breaker open and breaker racked in. 2. a) Bus under voltage. b) Motor over current.	1. a) Will shut WDV-892 if only RW pump operating. 2. a) Start RWP 1 or 2A. b) Investigate cause of pump trip.		CS/SC CS/O
D-8-2				
SW RW PUMP B MOTOR OVERLOAD	1. a) Overload relay alarms at 115% rated load. 2. a) High pump amps.	1. a) None. 2. a) Start RWP 1 or 2A secure RWP 2B.		51
D-8-3				
SW RW PUMP B OUT OF SERVICE	1. a) Breaker racked out. b) Loss of DC control power. 2. a) No indication on breaker control switch.	1. a) None. 2. a) Upon completion of maintenance place breaker back in service. b) Investigate loss of DC control power.		52 H/B
D-8-4				
SW RW PUMP B AUTO START	1. a) Control switch in normal after stop and breaker closes due to low header press or ES actuation. 2. a) Mismatch on control switch target. b) Possible NS SW pump trip alarm.	1. a) None. 2. a) Check if RWP 1 tripped. b) Ensure proper seawater flow through heat exchangers.		52 S/A
D-8-5				
ES B ACTUATION TEST BYPASS	1. a) HPI Auto Test Sel. SW Pulled Out/Pushed In - In Test 1, 2, or 3. b) LPI Auto Test Sel. SW Pulled Out/Pushed In - In Test 1, 2, or 3. c) RB Iso. Auto Test Sel. SW Pulled Out/Pushed In - In Test 1, 2, or 3. 2. a) HPI Refueling Test Red Light On/Monthly Test Red Light On. b) LPI Refueling Test Red Light On/Monthly Test Red Light On. c) RB Iso Refueling Test Red Light On/Monthly Test Red Light On.	1. a) Components of train in test are bypassed. 2. a) Return switch to normal if not testing.		
D-8-6				

ANNUNCIATOR  
PANEL  
LOCATION

NOTES

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D-2-1 1.a) If HPI is initiated due to an ES B actuation, the following RB Isolation valves will close:

LRV-71, LRV-73

CAV-2, CAV-6, CAV-431, CAV-7

CFV-29, CFV-42, MUV-49

WDV-4, WDV-61, WDV-62, WDV-405

b) If HPI is initiated due to an ES A or B actuation, the following RB Isolation valves will close:

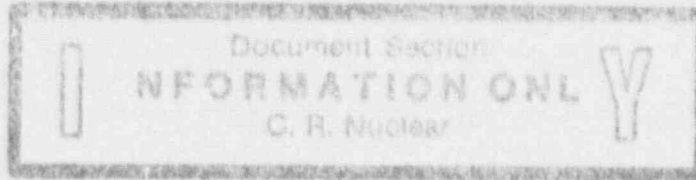
CFV-25, CFV-26, CFV-27, CFV-28

DWV-160

MUV-130, MSV-148

Rev. 15 11/21/91

Effective Date 12/5/91



ANNUNCIATOR RESPONSE

AR-305

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

ES E ANNUNCIATOR RESPONSE

THIS PROCEDURE ADDRESSES SAFETY RELATED COMPONENTS

APPROVED BY: Interpretation Contact

*D. K. F. [Signature]*

DATE: 12 5-91

INTERPRETATION CONTACT: Nuclear Operations  
Superintendent

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## 1.0 PURPOSE

- | 1.1 Establish a reference document for each Annunciator Window on the ES (B)-JH2 Lampbox.
- | 1.2 Establish operator actions for valid Annunciator alarms on the ES (B)-JH2 Lampbox.
- | 1.3 Establish a reference to other procedures which address operator actions for valid Annunciator alarms on the ES(B)-JH2 Lampbox.

## 2.0 REFERENCES

### 2.1 IMPLEMENTING REFERENCES

- | 2.1.1 AP-380 - Engineered Safeguards Actuation
- | 2.1.2 AP-770 - Emergency Diesel Generation Actuation

### 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-224-048

## 3.0 PERSONNEL INDOCTRINATION

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

## 4.0 INSTRUCTIONS

- | 4.1 Respond to alarms on the ES(B)-JH2 Lampbox as indicated on Enclosure 1, Annunciator Response.

## 5.0 FOLLOW-UP ACTIONS

- | None

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
RB SPRAY FS B SITUATION  E-1-1	1. a) RB press $\geq$ 30 psig. 2. a) RC press decrease rapidly. b) RB press, temp increase, possible RB radiation monitoring alarm. c) Decrease in steam generator press, rupture monitor actuation.	1. a) ES channel B sequence operation. 2. a) Insure ES B actuation. b) Refer to AP-380 (ESA).	$\geq$ 30 psig	6231/RB4, RB5, RB6
RB SPRAY PP B TRIP  E-1-2	1. a) Breaker oper with control switch in normal after start position, breaker racked in. 2. a) RB spray flow high/low alarm. b) Low voltage on ES bus.	1. a) None. 2. a) If BSP B is not in operation place A building spray system in operation if needed. b) Investigate reason for pump trip.		CS/SC CS/D
RB SPRAY PP B MOTOR OVERLOAD  E-1-3	1. a) Overload relay set at 115% rated load. 2. a) Possible excessive spray flow. b) Excessive BSP motor amps.	1. a) None. 2. a) Adjust flow to 1500 gpm or less. b) Check pump for proper operation. c) If condition is not corrected secure BSP as soon as possible.		51
RB SPRAY PP B OUT OF SERVICE  E-1-4	1. a) Breaker racked out. b) Loss of DC control power. 2. a) No indicating light on Breaker control switch.	1. a) None. 2. a) On completion of maintenance place breaker back in service. b) Investigate loss of DC control power.		52 H/B 27 C
RB SPRAY B FLOW HIGH/LOW  E-1-5	1. a) High RB spray flow of 1700 gpm or greater. b) ES actuation and RB spray flow $\leq$ 1400 gpm for 30 sec or more. c) RB spray flow $\geq$ 1300 gpm with DH from RB sump. d) RB spray flow $\leq$ 1100 gpm with DH from RB sump. 2. a) High or low BSP amperage. b) High or low RB spray flow indication.	1. a) None. 2. a) Check valve operation to insure proper flow path. b) Check BWST or RB sump level to insure supply of water for pump. c) Throttle BSV-4 to obtain proper flow rate.	$>$ 1700 gpm $\leq$ 1400 gpm $>$ 1300 gpm $\leq$ 1100 gpm	BS-1-FsZ
E-1-6				

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
RB FAN B HIGH SPEED TRIP  E-2-1	1. a) Control switch is normal after start position and breaker open. 2. a) Indicating light and control switch target mismatch. b) RB Fan 1B air flow low alarm. c) Increasing temp. in RB.	1. a) None. 2. a) Start non operating RB Fan. b) Determine cause of trip.		CS/SC CS/O (NC)
RB FAN B LOW SPEED TRIP  E-2-2	1. a) Control switch pulled out and in normal after start with breaker open. 2. a) Indicating light and control switch target mismatch. b) RB Fan 1B air flow low alarm. c) Increasing RB temp.	1. a) None. 2. b) Start non operating RB Fan. c) Determine cause of trip.		CS/SC CS/O (NO)
RB FAN B AIR FLOW LOW  E-2-3	1. a) Control switch in high speed normal after start position with low air flow 2. a) RB Fan 1B high speed trip alarm. b) RB Fan 1B running in low speed with control switch in high speed normal after start. c) RB temperature increasing.	1. a) None. 2. a) Check fan control switch matches fan operating status. b) If condition can not be corrected, then secure RB fan 1B and determine cause of problem.		AR-19-OPS CS/SC CS/O
RB FAN B VIBRATION HIGH  E-2-4	1. a) 3AH-20-ME vibration switch closed. 2. a) None.	1. a) None. 2. a) Push vib. reset push button for RB Fan 1B. b) Check fan for increased vibrating noise. c) IF Vib. alarm won't reset, stop RB Fan 1B.		3AH-20-ME
RB FAN B CONDENSATE HIGH  E-2-5	1. a) AHF-1B condensate flow > 1133 cc/min 2. a) None.	1. a) None. 2. a) Determine if source and amount of condensate is abnormal or unusual.	1133 cc/min	AR-657-F15
COLD LEG B NOZZLE DAM PROBLEM  E-2-5*	1. a) Nozzle Dam pressure high. b) Nozzle Dam pressure low. c) Nozzle Dam air flow high. d) Nozzle Dam air flow low. e) Nozzle Dam power failure. 2. a) None.	1. a) None. 2. a) Determine problem utilizing Local Nozzle Dam Monitor.		
ES B ACTUATION TROUBLE  E-2-6	1. a) ES signal on one or more channels. 2. a) Low RC pressure. b) High RB pressure.	1. a) None. 2. a) Verify condition, if valid follow appropriate EP or AP for condition. b) If not valid alarm, notify Electrical Supervisor.		ALARM MATRIX

\*Temporary window in lieu of E-2-5 when nozzle dams are installed per THAR 89-10-19-02.



ANNUNCIATOR PANEL LOCATION ES(B)-JH2 ANNUNCIATOR PANEL E VERTICAL COLUMN 3

WINDOW TITLE  
 1. INDICATED CONDITION  
 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE

1. AUTO ACTION  
 2. OPERATOR ACTION - VALID ALARM

SENSING ELEMENT NUMBER & LOCATION

WINDOW TITLE	INDICATED CONDITION	CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	AUTO ACTION	OPERATOR ACTION - VALID ALARM	VERTICAL COLUMN	SENSING ELEMENT NUMBER & LOCATION
E-3-1	1. a) RB pressure reaches 2 psig increasing. 2. a) Increasing RB press. b) Increasing RB temp.		1. a) None. 2. a) Investigate reason for pressure increase. b) If necessary shift RB ventilation to fast speed supplied from SW.		3	≥ 2 psig 65-65-PR
E-3-2	1. a) Average of AH-536, 537, 538, 539-TE > 125°F 2. a) RB temp on plant computer (Group #9).		1. a) None. 2. a) Start non-operating RB fans in fast speed. b) Place RB fans on SW cooling.		3	125°F AH-536-TY4
E-3-3						
E-3-4						
E-3-5						
E-3-6						

ANNUNCIATOR PANEL LOCATION ES(B)-JH2ANNUNCIATOR PANEL EVERTICAL COLUMN 4

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR SETPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
MAKEUP PP C TRIP  E-4-1	1. a) MUP C control switch in normal after start position and breaker open, breaker racked in. 2. a) Low bus voltage. b) Low flow indication.	1. a) None. 2. a) Start another MUP. b) Notify electrical supervisor of breaker trip.		CS/SC CS/O 52 H/A 52 S/B
MAKEUP PP C GEAR OIL PRESS LOW  E-4-2	1. a) MUP C breaker closed and gear oil press < 7 psi for > 20 sec. 2. a) None.	1. a) Auto start BU GDP. 2. a) Verify oil level in speed increaser. b) Shift to alternate MUP if possible.	7 psig	2 MUP-SC MU-90-PS
MAKEUP PP C MOTOR OVERLOAD  E-4-3	1. a) Over current time delay relay trip at 115% rated power. 2. a) Makeup flow high alarm. b) HPI flow high/low alarm.	1. a) None. 2. a) Reduce flow from MUP C if possible. b) Start another MUP.	115%	51
MAKEUP PP C LUBE OIL PUMP TRIP  E-4-4	1. a) MUP C backup lube oil pump in normal after start and starting solenoid not energized. b) MUP C main lube oil sump control switch in normal after start and main lube oil pump not running. 2. a) Backup LOP auto start.	1. a) Auto start backup lube oil pump at 3 psi lube oil press. 2. a) Check thermal overload on main LOP. b) Check level in main LO sump. c) Check for sufficient bearing flow on MUP C.		CS/SC CS/O (42B) (CR1)
E-4-5				
AUX STM ISO (ASV-196) BYPASSED  E-4-6	1. a) Automatic closure of ASV-196 is defeated. 2. a) Bypass switch on ES Control Panel.	1. a) None. 2. a) Return bypass switch to normal if bypass not required.		CONTROL SWITCH

ANNUNCIATOR PANEL LOCATION ES(B)-2#2 ANNUNCIATOR PANEL E VERTICAL COLUMN 5

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
E-5-1	MAKEUP PP C LUBE OIL PRESS LOW	1. a) MUP C lube oil header press < 3 psig. 2. a) MUP C LOP auto start alarm.	≤ 3 psig	MU-48-PS3
E-5-2	MAKEUP PP C LUBE OIL PUMP AUTO START	1. a) MUP C backup LOP control switch in normal after stop and backup LOP running. 2. a) MUP C lube oil pump trip alarm.	3 psig	CS/ST CS/O (CR1)
E-5-3	MAKEUP PP C OUT OF SERVICE	1. a) Breaker racked out. 2. a) Loss of DC control power. C. b) No indicating light on breaker control switch.		27 C 43/3C 52 H/B
E-5-4				
E-5-5	AUX STM ISO (ASV-196) AUTO CLOSED	1. a) ASV-196 closed. b) Possible AUX steam leak in AUX Bldg. 2. a) AUX steam line break alarm. b) ASV-196 Control Switch.	100 psig ± 2% (Decrease) 250 psig (Increase)	AS-037-PS1/ PS2 AS-037-PS3
E-5-6				

ANNUNCIATOR PANEL LOCATION ES(8)-JHc ANNUNCIATOR PANEL E VERTICAL COLUMN 6

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	AUTO ACTION 1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT NUMBER & LOCATION	SENSING ELEMENT NUMBER & LOCATION
MAKEUP PP B TRIP E-6-1	1. a) MUP d control switch in normal after start pos and breaker open, Breaker racked in. 2. a) Low bus voltage. b) Low flow indication.	1. a) None. 2. a) Start another MUP. b) Notify electrical supervisor of breaker trip.		CS/SC CS/O (52 H/A) (52 S/B)
MAKEUP PP B LUBE OIL PRESS LOW E-6-2	1. a) MUP B LO header press < 3 psig. 2. a) MUP B IOP auto start alarm.	1. a) BU LOP starts. 2. a) If BU LOP did not auto start, start BU LOP. b) If alarm does not clear start Backup MUP and secure MUP B. c) Check main lube oil sump level.	3 psig	MU-65-PS3
MAKEUP PP B MOTOR OVERLOAD E-6-3	1. a) Overcurrent time delay relay trip at 115% rated power. 2. a) Makeup flow high alarm. b) HPI flow high/low alarm.	1. a) None. 2. a) Reduce flow from MUP B if possible. b) Start another MUP.		51
MAKEUP PP B OUT OF SERVICE E-6-4	1. a) MUP B breaker racked out. b) Loss of DC control power. c) ES standby selector switch not selected to B. b) No indicating light on breaker control switch.	1. a) None. 2. a) Check position of ES standby selector switch. b) If maintenance is complete place breaker back in service as soon as possible. c) Investigate loss of DC control power.		27 C 43/38 52 H/B
E-6-5				
E-6-6				

ANNUNCIATOR PANEL LOCATION	ES(B)-JH2	ANNUNCIATOR PANEL	E	VERTICAL COLUMN	7	SETPoint:	SENSING ELEMENT NUMBER & LOCATION
WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM					
E-7-1							
E-7-2							
E-7-3							
E-7-4							
E-7-5							
H2 SAMPLING PANEL B TROUBLE	<p>1. a) Pass RB H2 Analyzer malfunction due to</p> <ul style="list-style-type: none"> <li>1. Flow <math>\leq 1.0</math> SCFH <math>\pm 0.2</math>.</li> <li>2. Pressure <math>\leq 4.0</math> PSI <math>\pm 0.5</math> psi.</li> <li>3. Thermo etec cooler temp <math>\leq 0.1</math> amps.</li> </ul> <p>b) Hi-percent H<sub>2</sub> <math>\geq 3\%</math> <math>\pm 0.25\%</math>.</p> <p>2. a) RB isolation valves status indication.</p>	<p>1. a) None.</p> <p>2. a) Notify Chemistry.</p>			<p>1.0 SCFH <math>\pm 0.2</math></p> <p>4.0 psi <math>\pm 0.5</math></p> <p>0.1 amps <math>\pm 0.25\%</math></p>	<p>Flow SW</p> <p>Press SW</p> <p>Temp SW</p>	
E-7-6							

ANNUNCIATOR PANEL LOCATION ES(B)-JH2ANNUNCIATOR PANEL EVERTICAL COLUMN 8

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER &
DIESEL GEN B FAILED TO START  E-B-1	1. a) Diff current relay A, B, or C. b) Diesel B speed less than 250 rpm 7 sec after start signal. c) Lube Oil press less than 6 psig 7 sec. after start signal. 2. a) Breaker 3210 trip. b) Diesel B trip. c) Diesel B trouble alarm. d) No machine voltage or current indication.	1. a) Open excitation circuit. b) Block any start signals. 2. a) Notify Electrical Supervisor for investigation of problem. b) Check diesel support systems for malfunction. c) Reset shutdown relay if required. d) Refer to AP-770 (EDGA).		850G38 LOCAL ANNUN.
DIESEL GEN B TROUBLE  E-B-2	1. a) Any alarm from Diesel Gen 1B local annunciator, see note E-B-2. b) Lube Oil Temperature < 110°F or Jacket Water < 115°F. 2. a) Possible engine shutdown. b) Possible generator breaker trip.	1. a) Possible engine shutdown. b) Possible generator breaker trip. 2. a) Investigate local alarm panel. b) Verify condition in alarm and correct.	110°F 115°F	LOCAL ANNUN. AUX RELAY OTL
DIESEL GEN B OUT OF SERVICE  E-B-3	1. a) Starting air pressure < 225 psig. b) Any of a number of switch for Diesel (B) of position; see note E-B-3. c) Loss of DC Control Power. 2. a) None.	1. a) None. 2. a) Check for air leaks. b) Open EGW 25 & 26 tie line to A diesel air system. c) Investigate cause of low air press and correct. d) Check switches listed in note E-B-3 and return to their proper position if conditions permit. e) Check control power indicating lights on diesel. f) Check DPDP-6B, breaker 12. g) Notify Electrical Supervisor for investigation of problem.	225 psig	LOCAL ANNUN.
CF TANK B LEVEL HIGH/LOW  E-B-4	1. a) High core flood tank B level 13.25 ft. b) Low core flood tank B level 12.75 ft. 2. a) Visual indication on CF tank level. b) Low or high core flood tank pressure alarm.	1. a) None. 2. a) Determine cause and return system to normal.	>13.25 ft. <12.75 ft.	CF-2-LS3 CF-2-LS4
CF TANK B PRESS HIGH/LOW  E-B-5	1. a) High CF tank B pressure > 615 psig. b) Low CF tank B pressure < 585 psig. 2. a) Visual indication on CF tank B pressure gauge. b) High or low CF tank level.	1. a) None. 2. a) Determine cause and return system to normal.	> 615 psig < 585 psig	CF-1-PS3 CF-1-PS4
CF TANK B DISCH VALVE OPEN/CLOSED  E-B-6	1. a) CFV 6 not closed and RC press < 700 psig. b) CFV 6 not open and RC press ≥ 715 psig. 2. a) CFV 6 not in correct position.	1. a) None. 2. a) Correct position of CFV 6.	< 700 psig ≥ 715 psig	33C RC-3A-PS3

ANNUNCIATOR  
PANEL  
LOCATION

NOTES

- E-8-2 1.a) If there is no engine shutdown signal present and:
1. If > 810 RPM for > 20 seconds or;
  2. If UPR lube oil header press is > 18# or coolant press > 12# for 20 seconds.
- And any of the following:
- a) Any UPR lube oil header press switch is < 16#.
  - b) Any crankcase press switch is > 0.6" H<sub>2</sub>O.
  - c) Coolant press is < 9#.
  - d) Fuel oil header press is < 10#.
- b) If > 250 RPM for > 20 seconds and:
1. Governor is NOT at high limit and;
  2. UPR lube oil header press is < 6#.
- c) Any of the following:
- a) Governor overspeed at 990-1010 RPM.
  - b) Lube oil sump temp < 90°F.
  - c) Lube oil sump level < 9 3/16".
  - d) Coolant expansion tank level < 14 gal.
  - e) Coolant temp > 195°F.
  - f) Manual air start shutoff valve not fully open.
  - g) FODT lo level > 24" from the top of tank.
  - h) FODT hi level < 13.5" from the top of tank.
  - i) DC fuel oil transfer pump running-will run when:
    1. Control switch in manual.
    2. Control switch in auto and FODT level between 15" and 22".
  - j) Loss of gen field.
  - k) Gen field ground.
  - l) Gen stator high temp.

ANNUNCIATOR  
PANEL  
LOCATION

NOTES

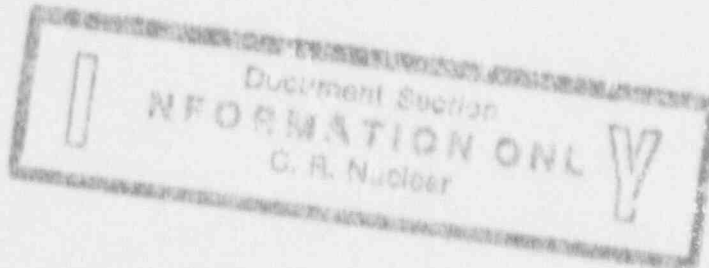
- 
- E-8-3      1.a) B diesel local control switch "normal-at engine" in "at engine" position.
- b) B diesel "jacket coolant pump" control switch in "off" or "manual" position.
- c) B diesel jacket coolant heater selector switch in "off" position.
- d) B diesel "standby circ pump (lube oil) control switch in the "manual" or "off" position.
- e) B diesel "DC fuel oil aux pump" B control switch in "off" or "manual" position.
- f) B diesel "DC fuel transfer pump" B control switch in "off" or "manual" position.
- g) B diesel "AC fuel oil transfer pump" B control switch in "off" or "manual" position.
- h) B diesel "AC air compressor motor" B control switch in the "off" or "manual" position.
- i) B diesel "auto-manual" selector switch in the control room is in the manual position.



Rev. 9

11/21/81

Effective Date 12/5/91



ANNUNCIATOR RESPONSE

AR-504

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

ICS L ANNUNCIATOR RESPONSE

THIS PROCEDURE ADDRESSES SAFETY RELATED COMPONENTS

APPROVED BY: Interpretation Contact

*[Handwritten signature]*

DATE: 12-5-91

INTERPRETATION CONTACT: Nuclear Operations  
Superintendent

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## 1.0 PURPOSE

- 1.1 Establish a reference document for each Annunciator Window on the ICS-CY4 Lampbox.
- 1.2 Establish operator actions for valid Annunciator alarms on the ICS-CY4 Lampbox.
- 1.3 Establish a reference to other procedures which address operator actions for valid Annunciator alarms on the ICS-CY4 Lampbox.

## 2.0 REFERENCES

### 2.1 IMPLEMENTING REFERENCES

- 2.1.1 AP-545 - Plant Runback
- 2.1.2 OP-605 - Feedwater System

### 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-224-048

## 3.0 PERSONNEL INDOCTRINATION

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

## 4.0 INSTRUCTIONS

- 4.1 Respond to alarms on the ICS-CY4 Lampbox as indicated in Enclosure 1, Annunciator Response.

## 5.0 FOLLOW-UP ACTIONS

None

ANNUNCIATOR PANEL ICS-CY4

VERTICAL COLUMN 1

ANNUNCIATOR PANEL 1

WINDOW TITLE 1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE

1. AUTO ACTION  
2. OPERATOR ACTION - VALID ALARM

WINDOW TITLE	INDICATED CONDITION	CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	AUTO ACTION	OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
FMP A TRIP L-1-1	1. a) FMP-A control oil supply press $\leq 55$ PSIG. b) FMP-A lube oil supply press $\leq 5$ PSIG. 2. a) FMP oil pumps indicating lights/switch position. b) Low oil sump level alarm. c) Control oil pressure indication. d) Lube oil pressure indication.		1. a) ICS fallback. b) FMP-28 (FM cross-tie) opens. 2. a) Refer to AP-545 (PR).		$\leq 55$ PSIG $\leq 5$ PSIG	FM-137-MS FM-188-PS
FMP A VIBRATION HIGH L-1-2	1. a) FMP A shaft vibration $\geq 3.5/4.0$ mils (alert/danger). b) FMP A shaft vibration $\geq 2.4/3.5$ mils (alert/danger). 2. a) Vibration indicator reading high. b) OK light out. ALERT/DANGER light on.		1. a) None 2. a) Reduce flow thru pump if DANGER.		3.5/4.0 mils 3.5/4.0 mils 2.4/3.5 mils	FM-267-MIS FM-269-MIS FM-239-MIS FM-241-MIS
FMP A OIL PRESS LOW L-1-3	1. a) FMP A lube oil pressure $\leq 18$ PSIG. b) FMP A lube oil pressure $\leq 12$ PSIG. c) FMP control oil pressure $\leq 90$ PSIG. 2. a) FMP oil pumps indicating lights/switch position. b) Low oil sump level alarm. c) High filter DP alarm. d) Lube oil pressure indication. e) Control oil pressure indication.		1. a) Auto start aux AC oil pump at 18 psi lube oil or 80 PSIG control oil. b) Auto start emerg DC oil pump at 12 PSIG. 2. c) Check the turb oil system and restore.		$\leq 18$ PSIG $\leq 12$ PSIG $\leq 90$ PSIG	FM-186-PS FM-187-PS FM-195-PS

ANNUNCIATOR PANEL LOCATION ICS-CY4ANNUNCIATOR PANEL LVERTICAL COLUMN 1

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPPOINT	SENSING ELEMENT NUMBER & LOCATION
FWP A LUBE OIL PUMP TRIP  L-1-4	1. a) FWPT A AC normal oil pump off with control switch in Normal After Start. b) FWPT A AC back up oil pump off with control switch in Normal After Start. c) FWPT A DC emergency oil pump off with control switch in Normal After Start.  2. a) Individual indicating lights/switch position.	1. a) Auto start of alternate pump. 2. a) Notify the secondary plant operator to check the turbine oil system.		CS/SC CS/O 42B
FWP A EMERG OIL PP AUTO START  L-1-5	1. a) FWPT A AC normal oil pump running with control switch in Normal After Stop. b) FWPT A AC back up oil pump running with control switch in Normal After Stop. c) FWPT A DC emergency oil pump running with control switch in Normal After Stop. 2. a) Individual indicating lights/switch position.	1. a) Auto start aux AC oil pump at 80 PSIG control oil or 18 PSIG lube oil. b) Auto start DC Emerg. oil pump at 12 PSIG lube oil. 2. a) Notify the secondary plant operator to check the turbooil system.		CS/SC CS/O 42A
FWP A LUBE OIL RESVR LEVEL HIGH/LOW  L-1-6	1. a) FWPT A lube oil tank level > 33 inches. b) FWPT A lube oil tank level < 18 inches. 2. a) None.	1. a) None. 2. a) Check oil level on local gauge glass. b) Check for water in lube oil. c) Add oil and check system for leaks.	33 inches 18 inches	FW-207-LS

ANNUNCIATOR PANEL ICS-CY4

ANNUNCIATOR PANEL 1

VERTICAL COLUMN 2

WINDOW TITLE 1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE

1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM

SETPOINT SENSING ELEMENT NUMBER & LOCATION

<p>FMP B TRIP</p> <p>L-2-1</p>	<p>1. a) FMP-B control oil supply press <math>\leq</math> 55 PSIG.                  b) FMP-B lube oil supply press <math>\leq</math> 5 PSIG.                  2. a) FMP oil pumps indicating lights/switch position.                  b) Low oil sump level alarm.                  c) Control oil pressure indication.                  d) Lube oil pressure indication.</p>	<p>1. a) ICS runback.                  b) FMP-28 (FW cross-tie) opens.                  2. a) Refer to AP-565 (PR).</p>	<p><math>\leq</math> 55 PSIG  <math>\leq</math> 5 PSIG</p>	<p>FW-136-PS                  FW-193-PS</p>
<p>FMP B VIBRATION HIGH</p> <p>L-2-2</p>	<p>1. a) FMP B shaft vibration <math>\geq</math> 3.5/4.0 mils (alert/danger).                  b) FMP B shaft vibration <math>\geq</math> 2.4/3.5 mils (alert/danger).                  2. a) Vibration indicator reading high.                  b) OK light out. ALERT/DANGER light on.</p>	<p>1. a) None.                  2. a) Reduce flow thru pump if DANGER.</p>	<p>3.5/4.0 MILS                  3.5/4.0 MILS                  2.4/3.5 MILS</p>	<p>FW-268-MIS                  FW-270-MIS                  FW-240-MIS                  FW-242-MIS1</p>
<p>FMP B OIL PRESS LOW</p> <p>L-2-3</p>	<p>1. a) FMP B lube oil pressure <math>\leq</math> 18 PSIG.                  b) FMP B lube oil pressure <math>\leq</math> 12 PSIG.                  c) FMP control oil pressure <math>\leq</math> 90 PSIG.                  2. a) FMP oil pumps indicating lights/switch position.                  b) Low oil sump level alarm.                  c) High filter DP alarm.                  d) Lube oil pressure indication.                  e) Control oil pressure indication.</p>	<p>1. a) Auto start aux AC oil pump at 18 PSIG lube oil or 80 PSIG control oil.                  b) Auto start emerg DC oil pump at 12 PSIG.                  2. a) Check the turb oil system and restore.</p>	<p><math>\leq</math> 18 PSIG  <math>\leq</math> 12 PSIG  <math>\leq</math> 90 PSIG</p>	<p>FW-197-PS                  FW-192-PS                  FW-198-PS</p>

ANNUNCIATOR PANEL LOCATION ICS-CY4ANNUNCIATOR PANEL 1VERTICAL COLUMN 2

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
FWP B LUBE OIL PUMP TRIP  L-2-4	1. a) FWPT B AC normal oil pump off with control switch in Normal After Start. b) FWPT B AC back up oil pump off with control switch in Normal After Start. c) FWPT B DC emergency oil pump off with control switch in Normal After Start. 2. a) Individual indicating lights/switch position.	1. a) Auto start of alternate pump. 2. a) Notify the secondary plant operator to check the turbine oil system.		CS/SC CS/D 42B
FWP B EMERG OIL PP AUTO START  L-2-5	1. a) FWPT B AC normal oil pump running with control switch in Normal After Stop. b) FWPT B AC jack up oil pump running with control switch in Normal After Stop. c) FWPT B DC emergency oil pump running with control switch in Normal After Stop. 2. a) Individual indicating lights/switch position.	1. a) Auto start aux AC oil pump at 80 PSIG control oil or 18 PSIG lube oil. b) Auto start DC Emerg. oil pump at 12 PSIG lube oil. 2. a) Notify the secondary plant operator to check the turbine system.		CS/SC CS/D 42A
FWP B LUBE OIL RESVR LEVEL HIGH/LOW  L-2-6	1. a) FWPT B lube oil tank level $\geq$ 33 inches. b) FWPT B lube oil tank level $\leq$ 18 inches. 2. a) None.	1. a) None. 2. a) Check oil level on local gauge glass. b) Check for water in lube oil. c) Add oil and check system for leaks.	33 inches 18 inches	FW-208-LS

ANNUNCIATOR PANEL LOCATION ICS-CY4ANNUNCIATOR PANEL LVERTICAL COLUMN 3

WINDOW TITLE

1. INDICATED CONDITION
2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE

1. AUTO ACTION
2. OPERATOR ACTION - VALID ALARM

SETPOINT  
SENSING  
ELEMENT  
NUMBER &  
LOCATION

FWBP A TRIP  L-3-1	<ol style="list-style-type: none"> <li>1. a) FW booster pump breaker is open and the control switch is in the normal after start position.</li> <li>2. a) FW boost pps overload alarm. b) FWBP aux oil pp auto start alarm. c) "Unit master in tracking" alarm.</li> </ol>	<ol style="list-style-type: none"> <li>1. a) ICS runback to 55% FP.</li> <li>2. a) Ensure that the ICS properly controls unit for existing plant conditions. b) Determine cause of pump trip and restore per OP-605. c) Refer to AP-545 (PR).</li> </ol>		SWGR BKR CONTACTS
L-3-2				
FWP TROUBLE  L-3-3	<ol style="list-style-type: none"> <li>1. a) FWPT A/B speed <math>\geq</math> 6600 rpm. b) FWPT A/B speed <math>\leq</math> 1/12 rpm and turning gear not engaged. c) FWPT A/B exhaust vacuum <math>\geq</math> 15 in-Hg. d) FWPT A/B exhaust temp. <math>\geq</math> 180 F. e) FWPT A/B shaft position <math>\geq</math> 10/20 mils. (Alert/Danger). f) FWPT A/B shaft eccentricity <math>\geq</math> 2.4/3.5 mils (Alert/Danger). g) FWPT A/B speed <math>\leq</math> 100 rpm. h) FWPT A/B trip blocked. i) FWPT A/B oil filter dp <math>\geq</math> 70 psi. j) FWPT A/B emergency oil pump motor overload. k) FWPT A/B turning gear overload.</li> <li>2. a) FWPT speed indication. b) None. c) Main Turbine Vacuum indication. d) None. e) FWPT Vibration Monitoring Panel. f) FWPT Vibration Monitoring Panel. g) FWPT Speed indication. h) FWPT Test in progress. i) FWPT control oil pressure indication. j) None. k) None.</li> </ol>	<ol style="list-style-type: none"> <li>1. a) FWP Trip - ICS runback.</li> <li>2. a) Refer to AP-545 (PR). b) Manually engage turning gear. c) Reduce plant load to available CW flow. d) Increase steam flow through turbine. e) Reduce FW flow if DANGER. f) Reduce FW flow if DANGER. g) Increase speed prior to releasing missing speed pushbutton. h) Complete test. i) Clean filter. j) Secure pump if as soon as system conditions allow. k) Secure turning gear. Check for rubs.</li> </ol>	6600 rpm 1/12 rpm 15 in-Hg 180 F 10/20 mils 2.4/3.5 mils 100 rpm 20 psi	74-11AX 74-11BX 62X FW-106-PS FW-107-PS FW-100-TS FW-101-TS FW-237-KIS FW-238-KIS FW-241-MIS2 FW-242-MIS2 74TMAX 74TMBX FW-201-PS FW-202-PS 49 49X



ANNUNCIATOR PANEL LOCATION ICS-CY4ANNUNCIATOR PANEL LVERTICAL COLUMN 3

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
FWP BRG OIL DRAIN TEMP HIGH  L-3-4	1. a) FWPT A/B bearings #1/#2 drain temperature ≥ 170°F. 2. a) Loss of cooling water to lube oil cooler. b) Lube oil flow low. c) Lube oil pressure low.	1. a) None. 2. a) Determine cause of high temperature and reduce load on FWPT as required.	170°F	FW-143-TS FW-144-TS FW-145-TS FW-146-TS
FWP OIL CLR OUTLET TEMP HIGH  L-3-5	1. a) FWPT A/B oil cooling outlet temperature ≥ 140°F. 2. a) FWPT BRG drain temp high alarm.	1. a) None. 2. a) Determine cause of high temperature and reduce load on FWPT as required. b) Check for: 1. Reduced cooling water flow to cooler.  2. Increases in return oil temperature.	140°F	FW-211-TS FW-212-TS
(MSV-53/ MSV-54) NOT FULL OPEN  L-3-6	1. a) Turbine bypass isolation valves (MSV-53 & MSV-54) not full open. 2. L) Valve open indicating lamp.	1. a) None. 2. a) Re open valve(s) if plant conditions permit.		33 80

WINDOW TITLE	1. INDIC. RED COIL POSITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER &
FWBP OVERLOAD L-4-1	1. a) FW booster pump breaker is open and the control switch is in the normal after start position. 2. a) FW booster pump overload alarm. b) FWBP aux oil pump auto start alarm. c) "Unit master in tracking" alarm.	1. a) ICS runback to 55% FP. 2. a) Ensure that the ICS properly controls unit for existing plant conditions. b) Determine cause of pump trip and restore per GW-605. c) Refer to AF-545 (PR).		SWGR BKR CONTACTS
FWBP MOTOR OVERLOAD L-4-2	1. a) FW booster pump A and/or B overcurrent. 2. a) High feedwater flow rate. b) Motor amp indication.	1. a) None. 2. a) Determine cause of alarm and correct.		SWGR 51
FWBP LUBE OIL PUMP TRIP L-4-3	1. a) FW booster pump A/B auxiliary oil pump off and control switch in Normal After Start. 2. a) Breaker position indication.	1. a) None. 2. a) Stop the affected booster pump if the oil pressure is not being maintained by the shaft driven gear oil pump. b) Determine cause of aux oil pump trip and correct.		SWGR BKR CONTACTS
FWBP LUBE OIL PUMP AUTO START L-4-4	1. a) FWBP A/B running and control switch in Normal After Stop. 2. a) None.	1. a) Auto start if oil press $\leq$ 5 PSIG. 2. a) Check for malfunction of main lube oil pump. b) Check for low lube oil level.	5 PSIG	SWGR BKR CONTACTS
FWBP SEAL POT LEVEL LOW L-4-5	1. a) FWBP seal return pot level $\leq$ 7 3/8". 2. a) None.	1. a) None. 2. a) Notify Nuclear secondary plant Operator to check GWV-6.	7 3/8"	GW-36-LS
L-4-6				