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NR2A SA1G _____ FLORIDA POWER CORP, P.O. BOX 219
CRYSTAL RIVER FLA 32623
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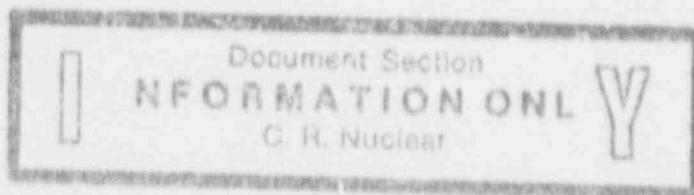
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Rev. 9 03/26/92

Effective Date

3/31/92



ANNUNCIATOR RESPONSE

AR-304

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

ESD ANNUNCIATOR RESPONSE

THIS PROCEDURE ADDRESSES SAFETY RELATED COMPONENTS

APPROVED BY: Interpretation Contact

W. Marshall

DATE:

3/30/92

INTERPRETATION CONTACT: Nuclear Operations
Superintendent

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ENCLOSURES

1 Annunciator Response	3
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1.0 PURPOSE

- 1.1 Establish a reference document for each Annunciator Window on the ES (B)-JH1 Lampbox.
- 1.2 Establish operator actions for valid Annunciator alarms on the ES (B)-JH1 Lampbox.
- 1.3 Establish a reference to other procedures which address operator actions for valid Annunciator alarms on the ES(B)-JH1 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-360 - Loss of Decay Heat Removal
- 2.1.4 OP-209 - Plant Cool-down
- 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 VBOP-5 Breaker 28.

4.0 INSTRUCTIONS

- 4.1 Respond to alarms on the ES(B)-JH1 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
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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 \geq 4 psig \leq 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 $>$ 10 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).	<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 (DHV-6) OPEN D-2-3	1. a) RC press $>$ 200 psig and DHV 6 open. 2. a) DHV 6 open. b) RC press $>$ 200 psig.	1. a) None. 2. a) Close DHV 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 \leq 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 only if directed by an approved procedure, <u>AND</u> with the concurrence of the NUS/ANSS.	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. 2. 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 DVERTICAL 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 NPI 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-380 (ESA).	500 psig 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 4.7; 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 main- tenance 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 GTSG. 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 BWST. c) DHP B tripped.	1. a) None. 2. a) Increase flow via DHV 111. b) If BWST level lost, switch suction to RB sump. c) Ensure proper flow path. d) Refer to AP-360 (LDHR).	< 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
D-4-1				
DC PUMP B TRIP	1. a) Breaker control switch in normal after start, breaker open, 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. c) 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 suspect, investigate probable cause & correct.	11' 4" 8' 6"	DC-52-LS
D-4-6				

ANNUNCIATOR PANEL LOCATION ES(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 OPER 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 open.	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) DNCC AH 3B air flow low alarm. e) Temp permissive light for AHF 15B out, DH CC AH B air flow low alarm.	1. a) AHF 15B trip. 2. a) Determine cause of alarm and correct.	058" H ₂ O 135°F	CS/SC CS/O AH-408-OPS 3AH-410-TS
D-5-4				
DC PUMP B SUCTION TEMP HIGH D-5-5	1. a) High temp of 105° increasing. 2. a) Loss of seawater cooling. b) Increasing DC temperature.	1. a) None. 2. a) Check seawater ΔT on heat exchanger to insure proper operation. b) Refer to AP-360 (LDHR).	105°	DC-5B-TS
BS/DH PUMP B DC FLOW LOW D-5-6	1. a) DHP B motor DC flow low ≤ 24 gpm. b) BSP B motor DC flow low ≤ 20 gpm. 2. a) DCP B off. b) Low discharge pressure of DCP B.	1. a) None. 2. a) Monitor DHP and BSP motor winding temp if running and secure DRP when temp exceeds 265°F or BSP when temp exceeds 300°F. b) Attempt to restore DC flow to DHP or BSP as soon as possible. Refer to AP-360 (LDHR).	≤ 24 gpm ≤ 20 gpm	DC-6S-FIS DC-74-FIS

ANNUNCIATOR PANEL LOCATION ES(B)-JH1ANNUNCIATOR PANEL DVERTICAL 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
D-6-1				
DH RW PUMP B TRIP D-6-2	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
DH RW PUMP B MOTOR OVERLOAD D-6-3	1. a) H1 current to pump motor. 2. a) H1 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
DH RW PUMP B OUT OF SERVICE D-6-4	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
DH RW PUMP B DISCH PRESS LOW D-6-5	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-6-6				

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-380 (ESA).	≥ 4 psig	6321/RB1 RB2, RB3
SG PUMP B TRIP D-7-2	1. a) Breaker open 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 11 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 B

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIF. OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
D-B-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 MDV-892 if only RW pump operating. 2. a) Start RWP 1 or 2A. b) Investigate cause of pump trip.		CS/SC CS/D
D-B-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-B-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-B-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-B-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-B-6				

ANNUNCIATOR
PANEL
LOCATION

NOTES

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-23

DWV-160

MUV-130, MSV-148