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CRYSTAL RIVER FLA. 32623
___ (7) QUALITY PROGRAMS PERSONNEL HAVE READ AND UNDERSTOOD THE CHANGES TO THE AFFECTED GAP'S

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Rev. 10 03/26/92

Effective Date 4/1/92

ANNUNCIATOR RESPONSE

AR-301

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

ESA ANNUNCIATOR RESPONSE

THIS PROCEDURE ADDRESSES SAFETY RELATED COMPONENTS

APPROVED BY: Interpretation Contact

W. Marshall

DATE: 4/1/92

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)-KW1 Lampbox.

1.2 Establish operator actions for valid Annunciator alarms on the ES(A)-KW1 Lampbox.

1.3 Establish a reference to other procedures which address operator actions for valid Annunciator alarms on the ES(A)-KW1 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 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(A)-KW1 Lampbox as indicated on Enclosure 1, Annunciator Response.

5.0 FOLLOW-UP ACTIONS

None

ANNUNCIATOR PANEL LOCATION ES(A)-KW1 ANNUNCIATOR PANEL A VERTICAL 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 A ACTUATION A-1-1	1. a) Low RC pressure ≤ 1500 psig. b) High RB pressure ≥ 4 psig. c) Lo-Lo RC Pressure ≤ 300 psig. d) Manual HPI Actuation A. 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 A sequence operation. 2. a) Ensure proper ES actuation. b) Refer to AP-380 (FSSA).	≤1500 psig ≥ 4 psig ≤ 500 psig	
LOAD SEQUENCE BLOCK 2 ACTUATION A A-1-2	1. a) When either RC 1, RC 2, or RC 3 five sec time delay relay is energized. 2. a) ES channel status indication.	1. a) RWP 2A auto start if two channels actuate. b) AHF 1A or 1C auto start in slow speed if two channels actuate. 2. a) Check equipment for proper operation.		
LOAD SEQUENCE BLOCK 3 ACTUATION A A-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 1A auto start if two channels actuate. b) AHF-15A auto start if tw channels actuate. 2. a) Check equipment for proper operation.		
LOAD SEQUENCE BLOCK 4 ACTUATION A A-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-1A auto start if two channels actuate and RCS < 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 A A-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-3A auto start if two channels actuate. 2. a) Check equipment for proper operation.		
LOAD SEQUENCE BLOCK 6 ACTUATION A A-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-1A auto start if two channels actuate. b) BSP-1A 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(A)-KW1 ANNUNCIATOR PANEL A 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
DIVERSE CONTAINMENT ISOLATION A A-2-1	1. a) ES A components go to HPI Status. 2. a) RCS Pressure ≤ 1500 psig.	1. a) Note A-2-1. 2. a) Refer to AP-380 (ESA).	≤1500 psig	
HPI A FLOW HIGH/LOW A-2-2	1. a) HPI actuation A and HPI flow to Loop A-1 or A-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-FS2 MU-23-FS4 MU-23-FS2 MU-23-FS4
LPI (DHV-5) OPEN A-2-3	1. a) RC press > 200 psig and DHV 5 open. 2. a) DHV 5 open. b) RC press > 200 psig.	1. a) None. 2. a) Close DHV 5 or reduce RC press to less than 284 psig.	200 psig	RC-3A-PS4 33AC
LPI A FLOW HIGH/LOW A-2-4	1. a) High DHP-A flow ≥ 3750 gpm. b) LPI ES A actuation signal and low DHP-A flow ≤ 2800 gpm for greater than 5 seconds. 2. a) DHP-A motor overload, tripped or out of service. b) DHP-A motor amps high or fluctuating.	1. a) None. 2. a) Ensure DHP-B (LPI mode) operating. b) Check for complete LPI flow path. c) Attempt to start DHP-A with control switch.	> 3750 gpm < 2800 gpm (> 5 sec.)	JH-1-FS1
ES A ACTUATION NOT BYPASSED A-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, AND with the concurrence of the NSS/ANSS	750 psig 1640 psig	62 A
ES A ACTUATION NOT RESET A-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 A MATRIX

ANNUNCIATOR PANEL LOCATION ES(A)-KW1 ANNUNCIATOR PANEL A 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	SETPOINT	SENSING ELEMENT NUMBER & LOCATION
LPI ES A ACTUATION A-3-1	1. a) RC press ≤ 500 psig. b) RB press ≥ 4 psig. c) Manual LPI Actuation A. 2. a) Decreasing RC pressure. b) Increasing RB press or temp. c) Loss of RC.	1. a) ES LPI A actuation. b) ES HPI A sequence operates. 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 A TRIP A-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-1A; e.g. proper suction valve alignment and RCS/vessel level. b) Place DH system 'B' 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 A MOTOR OVERLOAD A-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 A OUT OF SERVICE A-3-4	1. a) DHP A breaker pulled. b) DHP A 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/E 27 c
DH PUMP A SUCT TEMP HIGH A-3-5	1. a) Suction temp > 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-TS1
DH PUMP A FLOW LOW A-3-6	1. a) DHP A control switch in normal after start and DHP A discharge is less than 1500 gpm. 2. a) DHP A motor amps cycling. b) Loss of level in BWST. c) DHP A tripped.	1. a) None. 2. a) Increase flow via DHV 110. 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-FS3

ANNUNCIATOR PANEL LOCATION ES(A)-KW1 ANNUNCIATOR PANEL A VERTICAL 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
A-4-1				
DC PUMP A TRIP A-4-2	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 B 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
DC PUMP A MOTOR OVERLOAD A-4-3	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 3 pump discharge valve. b) If overload condition cannot be corrected secure pump. c) Ensure air handling units are in operation		49X
DC PUMP A OUT OF SERVICE A-4-4	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
DC PUMP A DISCH PRESS LOW A-4-5	1. a) DCP A 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-55-PS R/A TIMER
DC TANK A LEVEL HIGH/LOW A-4-6	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 10 opens at 8' 6" and closes at 11' 3". 2. a) Ensure proper operation of DCV-10. b) If DCV-10 fails to operate properly, secure fill on high alarm by shutting DCV-50, if low level, manually fill surge tank. c) If leak is suspected investigate probable cause & correct.	11' 4" 8' 6"	DC-48-LS

ANNUNCIATOR PANEL LOCATION ES(A)-KW1 ANNUNCIATOR PANEL A 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
RC LOOP A VENT VLVS OPEN A-5-1	1. a) RCV-157, 158, 159 or 160 open. 2. a) Control Switch Lights b) Flow Indicator Light	1. a) None. 2. a) Refer to EP-290 (ICC), AP-380 (ESA). b) Close valves if not required to be open.	OPEN	CONTROL SWITCH
A-5-2				
AH FAN 15A TROUBLE A-5-3	1. a) AHF 15A control switch in normal after start and breaker open. b) AHF 15A in normal after start and decreased air flow. c) Duct Temp ≥ 135°F. 2. a) Possible loss of temp permit on AHF 15A. b) AHF 15A trip. c) DHCC AH 3A trip alarm. d) DHCC AH 3A air flow low alarm. e) Temp permissive light for AHF 15A out, DH CC AH A air flow low alarm.	1. a) AHF 15A trip. 2. a) Determine cause of alarm and correct.	.058" H_2O 135°F	CH/SC CS/O AH-27-DPS 3AH-315-TS
A-5-4				
DC PUMP A SUCT TEMP HIGH A-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-57-TS
BS/DH PUMP A DC FLOW LOW A-5-6	1. a) DHP A motor DC flow low ≤ 24 gpm. b) BSP A motor DC flow low ≤ 20 gpm. 2. a) DCP A off. b) Low discharge pressure of DCP A.	1. a) None. 2. a) Monitor DHP and BSP motor winding temp if running and secure DHP 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-67-FIS DC-73-FIS

ANNUNCIATOR PANEL LOCATION ES(A)-KW1 ANNUNCIATOR PANEL A VERTICAL 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
A-6-1				
DH RW PUMP A TRIP A-6-2	1. a) Breaker tripped with control switch in normal after start position, breaker racked in. b) Under voltage on ES 4160 Bus A.	1. a) None. 2. a) If A DH system is in operation, transfer to B DH system and secure A DC system until reason for seawater pump trip is found and corrected. b) Refer to AP-360 (LDHR).		CS/SC CS/O
DH RW PUMP A MOTOR OVERLOAD A-6-3	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 screen if needed. c) Secure pump if overload continues.		51
DH RW PUMP A OUT OF SERVICE A-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 A DISCH PRESS LOW A-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-62-PS 52 S/A
A-6-6				

ANNUNCIATOR PANEL LOCATION ES(A) KW1 ANNUNCIATOR PANEL A VERTICAL 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 A ACTUATION A-7-1	1. a) RB press 4 psig increasing. b) Manual RB Isolation Actuation A. 2. a) Increasing RB press. b) Decreasing RC press. c) Increasing RB temp.	1 a) MB 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
SW PUMP A TRIP A-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 110 psig decreasing press. 2. a) Check auto start of SWP 1B. b) If SWP 1B did not auto start, start SWP 1B or 1C.		CS/SC CS/O
SW PUMP A MOTOR OVERLOAD A-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 1B or 1C and secure SWP 1A. b) Check SWP 1A and correct trouble.	115%	51
SW PUMP A OUT OF SERVICE A-7-4	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) When maintenance is complete, return breaker to service as soon as possible. b) Investigate loss of DC control power.		52 H/B 27 C
A-7-5				
A-7-6				

ANNUNCIATOR PANEL LOCATION CS(A)-KW1 ANNUNCIATOR PANEL A VERTICAL COLUMN B

WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SET JINT	SENSING ELEMENT NUMBER & LOCATION
A-8-1				
SW RW PUMP A TRIP A-8-2	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 MOV 891 if only RW pump operating. b) RWP 2B auto start at decreasing header press of 32 psi. 2. a) Start RWP 1 or 2B, if auto start fails. b) Investigate cause of pump trip.		CS/SC CS/O
SW RW PUMP A MOTOR OVERLOAD A-8-3	1. a) Overload relay alarms at 115% rated load. 2. a) Hi pump amps.	1. a) None. 2. a) Start RWP 1 or 2B secure RWP 2A.		51
SW RW PUMP A OUT OF SERVICE A-8-4	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
A-8-5				
ES A ACTUATION TEST BYPASS A-8-6	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) RBI&C 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.		

ANNUNCIATOR PANEL LOCATION		NOTES
A-2-1	1.a)	If HPI is initiated due to an ES A actuation, the following RB Isolation valves will close: LRV-70, LRV-72, MUV-40, MUV-41, MUV-505 CAV-1, CAV-3, CAV-4, CAV-5, CAV-126 CFV-11, CFV-12, CFV-15, CFV-16 WDV-3, WDV-60, WDV-94, WDV-406
	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 MSV-130, MSV-148