Effective Date 10-1-98

INFORMATION

ANNUNCIATOR RESPONSE

AR-301

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

ESA ANNUNCIATOR RESPONSE

APPROVED BY:

Procedure Owner

(SIGNATURE ON FILE)

DATE:

9/28/98

PROCEDURE OWNER: Manager, Nuclear Plant Operations Support

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1.0 PURPOSE

- 1.1 Establish a reference document for each Annunciator Window on the 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 EOP, Emergency Operating Procedure
- 2.1.2 OP-404, Decay Heat Removal System
- 2.1.3 OP-703, Plant Distribution System
- 2.1.4 AP-880, Fire Protection
- 2.1.5 AP-330, Loss of Nuclear Services Water

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
- 2.2.3 PT-169A, Decay Heat Removal/Building Spray Instrumention Train "A"
- 2.2.4 SP-132, Engineered Safeguards Channel Calibration

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

ESA ANNUNCIATOR RESPONSE

ESA-KW1-01-01

A-01-01



HPI ES A ACTUATION

EVENT POINT 0921

THIDTCATED	CONDITTION	

o HPI ACTUATION "A"

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o RCS PRESSURE <1500 PSIG
- o RCS PRESSURE <500 PSIG
- o RB PRESSURE >4 PSIG
- o MANUAL ACTUATION OF HPI
- O ES STATUS LIGHTS FOR AFFECTED CHANNELS CHANGE STATE

OPERATOR ACTIONS FOR A VALID ALARM:

O REFER TO EOP

DISCUSSION:

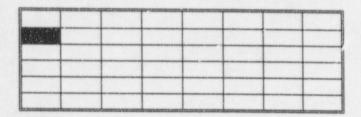
THIS ALARM INDICATES HPI HAS ACTUATED, OR SHOULD HAVE ACTUATED BY EITHER 2 OUT OF 3 HPI BI-STABLES TRIPPED OR BY THE CASCADE ACTUATION FROM LPI OR 4 PSIG REACTOR BUILDING PRESSURE. UPON RECEIPT OF THIS ALARM ES SHOULD BLOCK LOAD.

HPI BI-STABLES WILL TRIP AT ≤ 1540 PSIG AS SENSED BY RC-3A-PT3

REFERENCES: DRAWING 208-028 SHEET ESA-31

SENSING ELEMENT: 63-Z1A/RC-1,RC-2,RC-3 ES ACTUATION RELAYS, RC-3A-PT3

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BLOCK 2
ACTUATION A

EVENT POINT 1020

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o LOADING SEQUENCE BLOCK 2 ACTUATION "A"

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- O ES CHANNEL STATUS INDICATION
- o LOSS OF POWER TO AN ES ACTUATION CHANNEL CABINET
- O FAILURE OF AN ES CHANNEL SENSING ELEMENT
- o ES CHANNEL TESTING IN PROGRESS

OPERATOR ACTIONS FOR A VALID ALARM:

o REFER TO EOP

DISCUSSION:

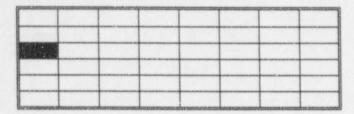
HPI HAS ACTUATED EITHER BY 2 OUT OF 3 HPI BI-STABLES TRIPPED OR BY THE CASCADE ACTUATION FROM LPI OR 4# RB PRESSURE AND ES EQUIPMENT STARTS OR

ONLY ONE OF THE HPI ACTUATION RELAYS HAS ACTUATED, AN ES CABINET HAS LOST POWER OR A SENSING ELEMENT HAS FAILED AND ES EQUIPMENT IS NOT STARTING

REFERENCES: DRAWING 208-028 SHEET ESA-25

SENSING ELEMENT: 62X1/RC-1,RC-2,RC-3 ES ACTUATION RELAYS

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	The state of the s	-4-3



LOAD SEQUENCE BLOCK 3 **ACTUATION A**

EVENT POINT 1021

INDICATED CONDITION:

o LOADING SEQUENCE BLOCK 3 ACTUATION "A"

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- O ES CHANNEL STATUS INDICATION
- o LOSS OF POWER TO AN ES ACTUATION CHANNEL CABINET
- o FAILURE OF AN ES CHANNEL SENSING ELEMENT
- o ES CHANNEL TESTING IN PROGRESS

OPERATOR ACTIONS FOR A VALID ALARM:

O REFER TO EOP

DISCUSSION:

HPI HAS ACTUATED EITHER BY 2 OUT OF 3 HPI BI-STABLES TRIPPED OR BY THE CASCADE ACTUATION FROM LPI OR 4# RB PRESSURE AND ES EQUIPMENT STARTS

ONLY ONE OF THE HPI ACTUATION RELAYS HAS ACTUATED, AN ES CABINET HAS LOST POWER OR A SENSING ELEMENT HAS FAILED AND ES EQUIPMENT IS NOT STARTING

REFERENCES: DRAWING 208-028 SHEET ESA-25

SENSING ELEMENT: 62X2B/RC-1, RC-2, RC-3 ES ACTUATION RELAY

ESA ANNUNCIATOR RESPONSE	ESA-KW1-01-04	A-01-04
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BLOCK 4
ACTUATION A

EVENT POINT 1022

INDICATED CONDITION:

o LOADING SEQUENCE BLOCK 4 ACTUATION "A"

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- O ES CHANNEL STATUS INDICATION
- o LOSS OF POWER TO AN ES ACTUATION CHANNEL CABINET
- o FAILURE OF AN ES CHANNEL SENSING ELEMENT
- o ES CHANNEL TESTING IN PROGRESS

OPERATOR ACTIONS FOR A VALID ALARM:

O REFER TO EOP

DISCUSSION:

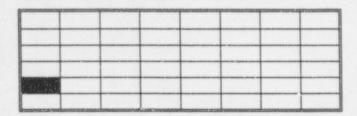
HPI HAS ACTUATED EITHER BY 2 OUT OF 3 HPI BI-STABLES TRIPPED OR BY THE CASCADE ACTUATION FROM LPI OR 4# RB PRESSURE AND ES EQUIPMENT STARTS OR

ONLY ONE OF THE HPI ACTUATION RELAYS HAS ACTUATED, AN ES CABINET HAS LOST POWER OR A SENSING ELEMENT HAS FAILED AND ES EQUIPMENT IS NOT STARTING TO RESET A BLOCK 4 ACTUATION THE HPI SEAL IN RESET PUSH-BUTTON MUST BE DEPRESSED.

REFERENCES: DRAWING 208-028 SHEET ESA-25

SENSING ELEMENT: 62X3/RC-1,RC-2,RC-3 ES ACTUATION RELAYS

ESA ANNUNCIATOR RESPONSE	ESA-KW1-01-05	A-01-05



BLOCK 5
ACTUATION A

EVENT POINT 0851

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o LOADING SEQUENCE BLOCK 5 ACTUATION "A"

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o ES CHANNEL STATUS INDICATION
- o LOSS OF POWER TO AN ES ACTUATION CHANNEL CABINET
- o FAILURE OF AN ES CHANNEL SENSING ELEMENT
- o ES CHANNEL TESTING IN PROGRESS

OPERATOR ACTIONS FOR A VALID ALARM:

o REFER TO EOP

DISCUSSION:

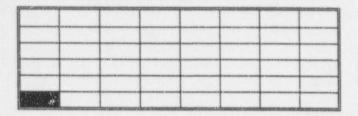
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ONLY ONE OF THE HPI ACTUATION RELAYS HAS ACTUATED, AN ES CABINET HAS LOST POWER OR A SENSING ELEMENT HAS FAILED AND ES EQUIPMENT IS NOT STARTING

REFERENCES: DRAWING 208-028 SHEET ESA-25

SENSING ELEMENT: 62X4 ES ACTUATION RELAY

ESA ANNUNCIATOR RESPONSE	ESA-KW1-01-06	A-01-06
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BLOCK 6
ACTUATION A

EVENT POINT 0852

INDICATED CONDITION:

o LOADING SEQUENCE BLOCK 6 ACTUATION "A"

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- O ES CHANNEL STATUS INDICATION
- o LOSS OF POWER TO AN ES ACTUATION CHANNEL CABINET
- o FAILURE OF AN ES CHANNEL SENSING ELEMENT
- o ES CHANNEL TESTING IN PROGRESS

OPERATOR ACTIONS FOR A VALID ALARM:

O REFER TO EOP

DISCUSSION:

HPI HAS ACTUATED EITHER BY 2 OUT OF 3 HPI BI-STABLES TRIPPED OR BY THE CASCADE ACTUATION FROM LPI OR 4# RB PRESSURE AND ES EQUIPMENT STARTS OR

ONLY ONE OF THE HPI ACTUATION RELAYS HAS ACTUATED, AN ES CABINET HAS LOST POWER OR A SENSING ELEMENT HAS FAILED AND ES EQUIPMENT IS NOT STARTING TO RESET A BLOCK 6 ACTUATION THE HPI SEAL IN RESET PUSH-BUTTON MUST BE DEPRESSED.

REFERENCES: DRAWING 208-028 SHEET ESA-25

SENSING ELEMENT: 62X5 ES ACTUATION RELAY

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	AND REAL PROPERTY.			

DIVERSE CONTAINMENT ISOLATION A

EVENT POINT 1106

INDICATED C	ONDITION:						
o PARTIAL	CONTAINMENT	ISOLATION	N "A"				
REDUNDANT I	NDICATION V	WHICH WILL	VERIFY AL	ARM:			
O AUTOMATT	C ACTUATION	N HPT "A"					
O AUTOMATI	C ACTUATION	, 111.7					
OPERATOR AC	TIONS FOR	A VALID AL	ARM:				
o REFER TO	EOP						
DISCUSSION:				***************************************			
THIS ALARM	M INDICATES	A PARTIAL	CONTAINM	ENT ISOLAT:	ION HAS OCC	CURRED.	
	WING VALVES						
LRV-70	LRV-72	MUV-		CAV-1	CAV-3		
CAV-4	CAV-5 WDV-60	CAV-126	CFV-11	CFV-12	CFV-26	CFV-16	
CFV-28	DWV-160	MSV-130	MSV-148	MUV-27	CFV-20	C1 4-27	
DEFERENCES	554.54	200 620 5	IFFT FCA F	7			
REFERENCES	: DRAWING	208-028 SF	HEET ESA-5	/			
SENSING EL	EMENT: 63Z	-4B ES ACT	TUATION RE	LAY			

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HPI A FLOW HIGH/LOW

EVENT POINT 1067

INDICATED CONDITION:

o LOOP A1 HPI FLOW IS >263 GPM AS SENSED BY MU-23-FS2

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

o HPI WIDE RANGE FLOW METER, MU-23-FI4

OPERATOR ACTIONS FOR A VALID ALARM:

- o REFER TO EOP-13 FOR HPI THROTTLING REQUIREMENTS
- o THROTTLE MUV-24 AS REQUIRED

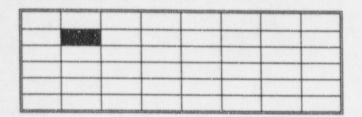
DISCUSSION:

RUNOUT CONDITIONS FOR A MAKEUP PUMP MAY BE VERIFIED BY OBSERVING MAKE UP PUMP CURRENT INDICATION FOR FLUCTUATIONS. ALSO FLOW OSCILLATIONS MAY OCCUR DURING HIGH FLOW CONDITIONS. IF ANY OF THESE SYMPTOMS ARE EVIDENT ON OPERATING MAKE UP PUMPS, CONSIDERATION SHOULD BE GIVEN TO SHUT DOWN THE MAKE UP PUMP.

REFERENCES: DRAWING 208-041 SHEET MU-047

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ESA ANNUNCIATOR RESPONSE	ESA-KW1-02-02



HPI A FLOW HIGH/LOW

EVENT POINT 1068

INDICATED CONDITION:

o LOOP A2 HPI FLOW >263 GPM AS SENSED BY MU-23-FS4

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

o HPI WIDE RANGE FLOW METER, MU-23-FI2

OPERATOR ACTIONS FOR A VALID ALARM:

- o REFER TO EOP-13 FOR HPI THROTTLING REQUIREMENTS
- o THROTTLE MUV-23 AS REQUIRED

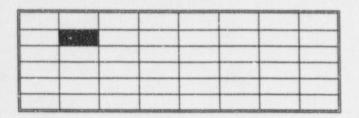
DISCUSSION:

RUNOUT CONDITIONS FOR A MAKEUP PUMP MAY BE VERIFIED BY OBSERVING MAKE UP PUMP CURRENT INDICATION FOR FLUCTUATIONS. ALSO FLOW OSCILLATIONS MAY OCCUR DURING HIGH FLOW CONDITIONS. IF ANY OF THESE SYMPTOMS ARE EVIDENT ON OPERATING MAKE UP PUMPS, CONSIDERATION SHOULD BE GIVEN TO SHUTTING THE MAKE UP PUMP DOWN.

REFERENCES: DRAWING 208-041 SHEET MU-047

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A-02-02



HPI A FLOW HIGH/LOW

EVENT POINT 1071

INDICATED CONDITION:

o LOOP A1 HPI FLOW <75 GPM AS SENSED BY MU-23-FS2, COINCIDENT WITH A HPI ACTUATION SIGNAL

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

o HPI LOW RANGE FLOW METER, MU-23-FI8-1

OPERATOR ACTIONS FOR A VALID ALARM:

- O REFER TO EOP-13 FOR HPI THROTTLING REQUIREMENTS
- O VERIFY PROPER MAKE UP PUMP OPERATION
- o ENSURE EITHER, >200 GPM TOTAL HPI FLOW PER RUNNING MAKEUP PUMP OR BOTH MAKE UP PUMP RECIRC VALVES, MUV-53 AND MUV-257 ARE OPEN

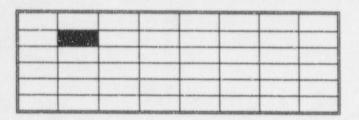
DISCUSSION:

LOW FLOW CONDITIONS FOR AN OPERATING MAKE PUMP CAN RESULT IN MAKE UP PUMP DAMAGE. DURING PERIODS OF LOW FLOW THE MAKE UP PUMP RECIRC VALVES MUST BE OPEN.

REFERENCES: DRAWING 208-041 SHEET MU-047

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HPI A FLOW HIGH/LOW

EVENT POINT 1072

INDICATED CONDITION:

o LOOP A2 HPI FLOW IS <75 GPM AS SENSED BY MU-23-FS4, COINCIDENT WITH A HPI ACTUATION SIGNAL

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

o HPI LOW RANGE FLOW METER, MU-23-FI6-1

OPERATOR ACTIONS FOR A VALID ALARM:

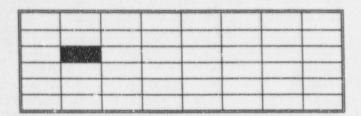
- o REFER TO EOP-13 FOR HPI THROTTLING REQUIREMENTS
- O VERIFY PROPER MAKE UP PUMP OPERATION
- O ENSURE EITHER, >200 GPM TOTAL HPI FLOW PER RUNNING MAKEUP PUMP OR BOTH MAKE UP PUMP RECIRC VALVES, MUV-53 AND MUV-257 ARE OPEN

DISCUSSION:

LOW FLOW CONDITIONS FOR AN OPERATING MAKE PUMP CAN RESULT IN MAKE UP PUMP DAMAGE. DURING PERIODS OF LOW FLOW THE MAKE UP PUMP RECIRC VALVES MUST BE OPEN.

REFERENCES: DRAWING 208-041 SHEET MU-047

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LPI (DHV-5) OPEN

EVENT POINT 0217

INDICATED CONDITION:

o DHV-5 NOT FULL CLOSED AND RCS PRESSURE IS >200 PSIG AS SENSED BY RC-3A-PS4.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o DHV-5 INDICATION
- o RCS PRESSURE INDICATION

OPERATOR ACTIONS FOR A VALID ALARM:

- o REFER TO EOP-08 IF ON LPI
- O IF ON DECAY HEAT REMOVAL THEN ENSURE PROPER DH FLOW PATH
- O REFER TO OP-404 FOR MINIMUM FLOW LIMITATIONS

DISCUSSION:

THIS ALARM MAY INDICATE THE ACI SETTING TS BEING APPROACHED (ABOUT 250#) IF THIS IS OCCURRING THEN THE OPERATOR SHOULD REDUCE RCS PRESSURE. CARE SHOULD BE TAKEN AS TO NOT OVERPRESSURIZE THE DECAY HEAT SYSTEM. WHILE ON LPI THIS ALARM WOULD INDICATE A LOW FLOW CONDITION ON THE OPERATING DECAY HEAT PUMP.

REFERENCES: DRAWING 208-021 SHEET DH-05

SENSING ELEMENT: RC-3A-PS4 AND 33 AC (CLOSED LIMIT SWITCH FOR DHV-5)

ESA ANNUNCI	ATOR RESPONSE	
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LPI A FLOW HIGH/LOW

EVENT POINT 0227

INDICATED CONDITION:

o DHP 1A FLOW >3750 GPM AS SENSED BY DH-1-FS1 (3650 TO 3850 GPM)

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

o DECAY HEAT FLOW INDICATOR DH-1-FI1 INDICATES HIGH FLOW

OPERATOR ACTIONS FOR A VALID ALARM:

- o REFER TO OP-404 FOR MAXIMUM DECAY HEAT FLOW LIMITATIONS
- o VERIFY PROPER OPERATION OF DHV-110, "A" DECAY HEAT CONTROL VALVE
- o REDUCE FLOW BY EITHER THROTTLING DHV-110 OR DHV-5, CLOSED

DISCUSSION:

THIS ALARM MAY INDICATE THE DECAY HEAT PUMP IS EXCEEDING ITS MAXIMUM FLOW. IF THIS OCCURS PUMP DAMAGE MAY RESULT FROM CAVITATION INDUCED BY PUMP RUNOUT. IF INDICATIONS OF CAVITATION EXIST THEN CONSIDERATION SHOULD BE GIVEN TO SECURING THE DECAY HEAT PUMP.

REFERENCES: DRAWING 208-021 SHEET DH-24

SENSING ELEMENT: DH-1-FS1

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ESA-KW1-02-04

	LPI A FLOW HIGH/LOW
	EVENT POINT 0229
ODHP-1A FLOW <2800 GPM AS SENSED BY DK- WITH LPI ACTUATION "A" (2700 TO 2900 C	
REDUNDANT INDICATION WHICH WILL VERIFY AS O DECAY HEAT FLOW INDICATOR, DH-1-FI1,	
OPERATOR ACTIONS FOR A VALID ALARM:	
o REFER TO EOP	A" DECAY HEAT CONTROL VALVE

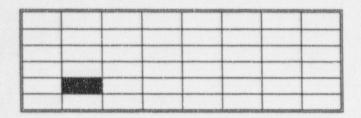
ESA ANNUNCIATOR RESPONSE

REFERENCES: DRAWING 208-021 SHEET DH-24

SENSING ELEMENT: DH-1-FS1

ESA ANNUNCIATOR RESPONSE

A-02-05



ES A ACTUATION NOT BYPASSED

EVENT POINT 0929

INDICATED CONDITION:

- o RCS PRESSURE <1640 PSIG AS SENSED BY RC-3A-PS6 AND HPI NOT BYPASSED
- o RCS PRESSURE <750 PSIG AS SENSED BY RC-3A-PS5 AND LPI NOT BYPASSED

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o RCS PRESSURE INDICATION
- O ES STATUS LIGHTS INDICATE ES NOT BYPASSED

OPERATOR ACTIONS FOR A VALID ALARM:

o IF DIRECTED BY AN APPROVED PROCEDURE AND WITH THE CONCURRENCE OF THE NSS/ANSS, THEN BYPASS HPI AND/OR LPI AS REQUIRED.

DISCUSSION:

THIS ALARM INDICATES THE ES SYSTEMS ARE STILL ABLE TO ACTUATE AND RCS PRESSURE IS DECREASING. IF THIS CONDITION OCCURS DURING A NORMAL PLANT COOL DOWN THEN ES MUST BE BYPASSED IN ORDER TO PREVENT INADVERTENT ACTUATION. IF, HOWEVER A PLANT TRANSIENT IS IN PROGRESS THIS ALARM INFORMS THE OPERATOR THAT ES ACTUATION IS IMMINENT.

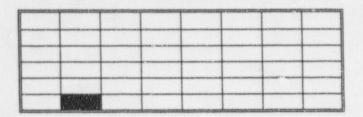
REFERENCES: DRAWING 208-028 SHEET ESAB-06

SENSING ELEMENT: 62-A ES ACTUATION RELAY, RC-3A-PS5, RC-3A-PS6

ESA ANNUNCIATOR RESPONSE

ESA-KW1-02-06

A-02-05



ES A ACTUATION NOT RESET

EVENT POINT 0927

INDICATED CONDITION:

- o RCS PRESSURE >1640 PSIG AS SENSED BY RC-3A-PS6 AND HPI NOT RESET
- o RCS PRESSURE >750 PSIG AS SENSED BY RC-3A-PS5 AND LPI NOT RESET

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o RCS PRESSURE INDICATION
- O ES STATUS LIGHTS INDICATE ES NOT RESET

OPERATOR ACTIONS FOR A VALID ALARM:

o IF DIRECTED BY AN APPROVED PROCEDURE AND WITH THE CONCURRENCE OF THE NSS/ANSS, THEN RESET HPI AND/OR LPI AS REQUIRED.

DISCUSSION:

THIS ALARM INDICATES THE ES SYSTEMS ARE STILL BYPASSED AND RCS PRESSURE IS INCREASING. IF HPI/LPI RC PRESSURE BI-STABLES ARE NOT RESET PRIOR TO EXCEEDING 1750 PSIG (HPI) OR 900 PSIG (LPI) HPI AND LPI WILL ACTUATE WHEN THE ACTUATION CIRCUIT BYPASS BITABLE AUTOMATICALLY RESETS AND REMOVES THE CHANNEL FROM BYPASS.

REFERENCES: DRAWING 208-028 SHEET ESAB-06

SENSING ELEMENT: RC-3A-PS5, RC-3A-PS6

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LPI ES A ACTUATION

EVENT POINT 0922

INDICATED CONDITION:

- o RCS PRESSURE IS <500 PSIG
- o REACTOR BUILDING PRESSURE >4 PSIG
- o MANUAL ACTUATION LPI "A"

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o RCS PRESSURE INDICATION
- o RB PRESSURE INDICATION
- O ES STATUS LIGHTS FOR AFFECTED CHANNELS CHANGE STATE

OPERATOR ACTIONS FOR A VALID ALARM:

O REFER TO EOP

DISCUSSION:

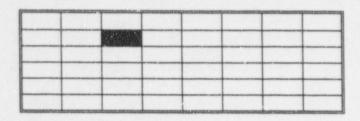
THIS ALARM INDICATES LPI HAS ACTUATED OR SHOULD HAVE ACTUATED BY EITHER 2 OUT OF 3 LPI BI-STABLES TRIPPED OR BY THE CASCADE ACTUATION FROM 4 PSIG REACTOR BUILDING PRESSURE, OR THAT A MANUAL LPI ACTUATION HAS OCCURRED. LPI BI-STABLES WILL TRIP AT ≤ 560 PSIG AS SENSED BY RC-3A-PT3

REFERENCES: DRAWING 208-028 SHEET ESA-42

SENSING ELEMENT: 63Z3 ES ACTUATION RELAY, RC-3A-PT3

ESA	ANNUNCIATOR	RESPONSE

A-03-02



DH PUMP A

EVENT POINT 0219

INDICATED CONDITION:

O DHP-1A BREAKER IS OPEN WITH CONTROL HANDLE IN THE NORMAL AFTER START POSITION

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o GREEN LIGHT WITH A RED FLAG ON CONTROL STATION
- o AMBER ES STATUS LIGHT

OPERATOR ACTIONS FOR A VALID ALARM:

- o REFER TO EOP-11
- o PLACE "B" DECAY HEAT TRAIN IN SERVICE PER OP-404
- O INVESTIGATE CAUSE OF PUMP TRIP

DISCUSSION:

IF CAUSE OF PUMP TRIP IS NOT APPARENT CARE SHOULD BE EXERCISED IN STARTING DHP-1B. SUCTION AND DISCHARGE FLOW PATHS SHOULD BE VERIFIED PRIOR TO ALTERNATE DECAY HEAT TRAIN STARTUP.

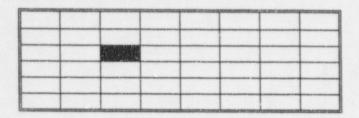
REFER TO TS FOR ADMINISTRATIVE REQUIREMENTS.

REFERENCES: DRAWING 208-021 SHEET ESA-42

SENSING ELEMENT: DHP-1A CONTROL SWITCH CONTACTS CS/SC AND CS/O

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A-03-03



DH PUMP A MOTOR OVERLOAD

EVENT POINT 0223

INDICATED CONDITION:

o DHP-1A MOTOR AMPS >115% RATED LOAD

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o DHP-1A HIGH MOTOR AMPS
- o DHP-1A TRIPS

OPERATOR ACTIONS FOR A VALID ALARM:

- o REDUCE DHP-1A LOAD BY THROTTLING DHV-110 OR DHV-5
- O IF LOAD REMAINS HIGH ON DHP-1A CONSIDER ALTERNATING DECAY HEAT TRAINS PER OP-404
- O HAVE BREAKER CUBICLE CHECKED FOR DROPPED TARGETS

DISCUSSION:

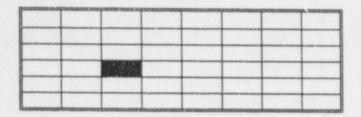
THIS ALARM INDICATES THAT EITHER THE TIMED OVERCURRENT OR INSTANTANEOUS OVERCURRENT PROTECTIVE DEVICES HAVE ACTUATED. INSTANTANEOUS OVERCURRENT PROTECTIVE RELAY ACTUATION WILL TRIP THE BREAKER.

IT IS POSSIBLE TO HAVE THIS ALARM PRIOR TO THE BREAKER TRIP.

REFERENCES: DRAWING 208-021 SHEET DH-01

SENSING ELEMENT: DHP-1A OVERCURRENT DEVICES (51 IOC OR 51 TOC)

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DH PUMP A OUT OF SERVICE

EVENT POINT 0221

INDICATED CONDITION: o DHP-1A BREAKER IS RACKED OUT. REDUNDANT INDICATION WHICH WILL VERIFY ALARM: o NO INDICATING LIGHTS ON CONTROL STATION o NO ES STATUS INDICATION OPERATOR ACTIONS FOR A VALID ALARM: o INVESTIGATE THE CAUSE FOR BREAKER BEING RACKED OUT DISCUSSION: ADDRESS TS REQUIREMENTS CONCERNING THIS CONDITION REFERENCES: DRAWING 208-021 SHEET DH-01

SENSING ELEMENT: DHP-1A BREAKER RELAY (52 H)

ESA ANNUNCIATOR RESPONSE	ESA-KW1-03-04	A-03-04
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DH PUMP A OUT OF SERVICE

EVENT POINT 0242

INDICATED CONDITION:

O DHP-1A BREAKER HAS NO DC CONTROL POWER.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o NO INDICATING LIGHTS ON DHP-1A CONTROL STATION
- O ES STATUS LIGHTS INDICATE BREAKER POSITION

OPERATOR ACTIONS FOR A VALID ALARM:

- o VERIFY CLOSED DPDP-5A SWITCH 10
- o VERIFY DC KNIFE SWITCH FOR DHP-1A IS CLOSED

DISCUSSION:

THIS CONDITION DISABLES REMOTE BREAKER OPERATION AND PROTECTIVE RELAYING. REFER TO OP-703 FOR INSTRUCTIONS ON LOCAL BREAKER OPERATION.

REFER TO TS FOR ADMINISTRATIVE REQUIREMENTS.

REFERENCES: DRAWING 208-021 SHEET DH-01

SENSING ELEMENT: DHP-1A BREAKER RELAY (27C)

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NAME AND ADDRESS OF THE PARTY O			NAME AND ADDRESS OF THE OWNER.	

DH PUMP A SUCT TEMP HIGH

EVENT POINT 0231

INDICATED CONDITION:

o DHP-1A SUCTION TEMP IS >280°F AS SENSED BY DH-6-TS1

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

o DHP-1A SUCTION TEMP. INDICATOR, DH-6-TI1 INDICATES HIGH

OPERATOR ACTIONS FOR A VALID ALARM:

- O VERIFY PROPER "A" DC SYSTEM OPERATION BY CHECKING DC SURGE TANK LEVEL, DC PUMP RUNNING AND DC CONTROL VALVES SETPOINT NORMAL.
- O VERIFY PROPER DC RAW WATER OPERATION BY CHECKING RWP-3A RUNNING, RWP-3A DISCHARGE PRESSURE GOOD AND DC RAW WATER TEMP NORMAL
- o INCREASE DC COOLING TO THE DC HEAT EXCHANGER BY INCREASING SETPOINT
- O IF RCS TEMPERATURE CONTINUES TO RISE CONSIDER ALTERNATING DECAY HEAT TRAINS PER OP-404.

DISCUSSION:

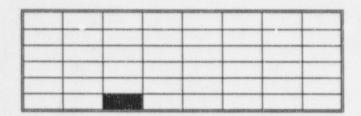
THIS ALARM INDICATES A LOSS OF COOLING TO THE RCS IS OCCURRING. CORE COOLING MUST BE REGAINED AS SOON AS POSSIBLE.

REFERENCES: DRAWING 208-021 SHEET DH-24

SENSING ELEMENT: DH-6-TS1

ENCLOSURE 1 (Page 23 of 54)

ESA ANNUNCIATOR RESPONSE ESA-KW1-03-06 A-03-06



DH PUMP A FLOW LOW

EVENT POINT 0225

INDICATED CONDITION:

O DHP-1A FLOW RATE <1500 GP'4 AS SENSED BY DH-1-FS3 WITH DHP-1A CONTROL HANDLE IN NORMAL AFTER START.

OR

DHP-1A RUNNING AND MOTOR AMPERAGE IS BELOW THE OPERATOR ADJUSTED SETPOINT.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o DECAY HEAT FLOW INDICATOR, DH-1-FI-1, INDICATES LOW FLOW
- o DHP-1A CONTROL STATION AMP METER

OPERATOR ACTIONS FOR A VALID ALARM:

- o INCREASE DHP-1A FLOW BY THROTTLING OPEN DHV-110 OR DHV-5
- o REFER TO OP-404 CONCERNING DECAY HEAT PUMP LOW FLOW OPERATION
- o IF DH FLOW CANNOT BE RECOVERED THEN CONSIDERATION SHOULD BE GIVEN TO ALTERNATING DECAY HEAT TRAINS PER OP-404
- o READJUST DHP-1A AMP MONITOR, DH-56-IR, LOCATED INSIDE MCB ON HVC SECTION, IF NECESSARY PER OP-404

DISCUSSION:

OPERATION AT LOW FLOW RATES MAY REDUCE DECAY HEAT PUMP LIFE, AND SHOULD BE AVOIDED.

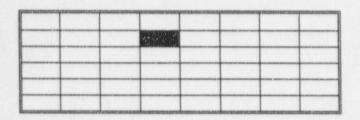
DHP-1A AMP MONITOR CAN BE ADJUSTED TO ALARM AT SLIGHTLY LESS THAN DHP STEADY STATE OPERATION.

REFERENCES: DRAWING 208-021 SHEET DH-01

SENSING ELEMENT: DH-1-FS3 AND DHP-1A CONTROL HANDLE CONTACTS, DH-56-IR

ESA	ANNUNCIATOR	RESPONSE

A-04-02



DC PUMP A

EVENT POINT 0200

INDICATED CONDITION:

o DCP-1A BREAKER OPEN AND CONTROL HANDLE IN NORMAL AFTER START

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

O GREEN LIGHT WITH A RED FLAG ON CONTROL STATION

OPERATOR ACTIONS FOR A VALID ALARM:

- o IF DH SYSTEM IS IN OPERATION CONSIDERATION SHOULD BE GIVEN TO ALTERNATING DECAY HEAT TRAINS PER OP-404
- O INVESTIGATE DCP-1A PUMP, MOTOR, AND BREAKER

DISCUSSION:

DCP-1A TRIP REMOVES COOLING FROM THE DH PUMP, BS PUMP, DC RW PUMP AND THE DC COOLED MAKE UP PUMP. ANY OF THESE PUMPS RUNNING WHEN THE DC PUMP TRIPS SHOULD BE SECURED AS SOON AS POSSIBLE. WITH THE EXCEPTION OF THE MAKE UP PUMP WHICH SHOULD BY SWAPPED OVER TO SW COOLING PER OP-408.

REFER TO TS FOR ADMINISTRATIVE REQUIREMENTS.

REFERENCES: DRAWING 208-019 SHEET DC-01

SENSING ELEMENT: CONTACTS IN THE DC PUMP CONTROL STATION

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A-04-03



DC PUMP A MOTOR OVERLOAD

EVENT POINT 0198

INDICATED CONDITION:

O DCP-1A MOTOR AMPS >115% RATED LOAD

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

o DCP-1A HIGH MOTOR AMPS

OPERATOR ACTIONS FOR A VALID ALARM:

- O INSPECT PUMP AND MOTOR FOR PROPER OPERATION
- O IF INSPECTION REVEALS MOTOR OR PUMP MALFUNCTION CONSIDERATION SHOULD BE GIVEN TO ALTERNATING DH TRAINS PER OP-404

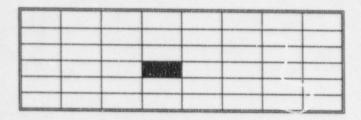
DISCUSSION:

THE LOSS OF A DC PUMP REMOVES COOLING FOR THE DH PUMP, BS PUMP, DC RW PUMP AND THE DC COOLED MAKE UP PUMP. ANY OF THESE PUMPS RUNNING WHEN THE DC PUMP TRIPS SHOULD BE SECURED AS SOON AS POSSIBLE. WITH THE EXCEPTION OF THE MAKE UP PUMP WHICH SHOULD BY SWAPPED OVER TO SW COOLING. IF DC PUMP HAS TO BE TRIPPED AFTER AN ES ACTUATION, HPI SEAL IN RESET MUST BE DEPRESSED BEFORE THE PUMP CAN BE SECURED.

REFERENCES: DRAWING 208-019 SHEET DC-01

SENSING ELEMENT: 49X RELAY IN BREAKER CUBICLE

ESA ANNUNCIATOR RESPONSE	ESA-KW1-04-04	A-04-04
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DC PUMP A OUT OF SERVICE

EVENT POINT 0210

INDICATED CONDITION:

o DCP-1A BREAKER IS RACKED OUT

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- O NO INDICATING LIGHTS ON CONTROL STATION
- o NO ES STATUS INDICATION

OPERATOR ACTIONS FOR A VALID ALARM:

O INVESTIGATE THE CAUSE FOR BREAKER BEING RACKED OUT

DISCUSSION:

ADDRESS TS REQUIREMENTS CONCERNING THIS CONDITION
THIS IS AN EXPECTED ALARM FOR BREAKER TAGGING OPERATIONS

REFERENCES: DRAWING 208-019 SHEET DC-01

SENSING ELEMENT: B/P CONTACTS IN THE DC PUMP BREAKER CUBICLE

ESA ANNUNCIATOR RESPONSE	ESA-KW1-04-04	A-04-04
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DC PUMP A OUT OF SERVICE

EVENT POINT 0212

INDICATED CONDITION:

O DCP-1A BREAKER HAS NO DC CONTROL POWER

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- O NO INDICATING LIGHTS ON CONTROL STATION
- O ES STATUS LIGHTS INDICATE BREAKER POSITION

OPERATOR ACTIONS FOR A VALID ALARM:

o VERIFY CLOSED DPDP-5A SWITCH 9

DISCUSSION:

THIS CONDITION DISABLES REMOTE BREAKER OPERATION AND PROTECTIVE RELAYING REFER TO OP-703 FOR INSTRUCTIONS ON LOCAL BREAKER OPERATION.

REFER TO TS FOR ADMINISTRATIVE REQUIREMENTS.

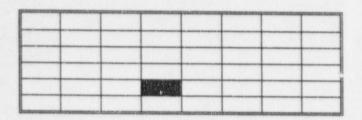
REFERENCES: DRAWING 208-019 SHEET DC-01

SENSING ELEMENT: CONTACTS IN THE DC PUMP BREAKER (27C)

ESA ANNUNCIATOR RESPONSE

ESA-KW1-04-05

A-04-05



DC PUMP A DISCH PRESS LOW

EVENT POINT 0199

INDICATED CONDITION:

O DCP-1A DISCHARGE PRESSURE IS <30 PSIG FOR > 5 SEC. AS SENSED BY DC-55-PS WITH DCP-1A BREAKER CLOSED.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o DCP-1A DISCHARGE PRESSURE INDICATOR DC-5-PI
- o DCP-1A CURRENT INDICATOR

OPERATOR ACTIONS FOR A VALID ALARM:

- VERIFY DC SURGE TANK IS >8.5 FEET IF NOT NOTIFY AUX BLDG OPERATOR TO MANUALLY FILL DCT-1.
- O IF DISCHARGE PRESSURE CANNOT BE RECOVERED THEN CONSIDERATION SHOULD BE GIVEN TO ALTERNATING DECAY HEAT TRAINS PER OP-404

DISCUSSION:

THE LOSS OF A DC PUMP REMOVES COOLING FOR THE DH PUMP, BS PUMP, DC RAW PUMP AND THE DC COOLED MAKE UP PUMP. ANY OF THESE PUMPS RUNNING WHEN THE DC PUMP IS LOST SHOULD BE SECURED AS SOON AS POSSIBLE, WITH THE EXCEPTION OF THE MAKE UP PUMP, WHICH SHOULD BE SWAPPED OVER TO SW COOLING. IF DC PUMP HAS TO BE TRIPPED AFTER AN ES ACTUATION, HPI SEAL IN RESET MUST BE DEPRESSED BEFORE THE PUMP CAN BE SECURED.

REFERENCES: DRAWING 208-019 SHEET DC-01

SENSING ELEMENT: DC-55-PS

ESA ANNUNCIATOR RESPONSE

ESA-KW1-04-06

A-04-06



DC TANK A LEVEL HIGH/LOW

EVENT POINT 0204

INDICATED CONDITION:

o "A" DC SURGE TANK LEVEL IS >11'7" AS SENSED BY DC-48-LS

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o DC SURGE TANK LEVEL INDICATION, DC-50-LI
- o LOCAL SURGE TANK LEVEL INDICATION
- O DECREASING RCS LEVEL WHILE ON DECAY HEAT

OPERATOR ACTIONS FOR A VALID ALARM:

- O VERIFY AUTOMATIC DC SURGE TANK FILL VALVE, DCV-10 IS CLOSED IF NOT THEN MANUALLY ISOLATE DCV-10 BY CLOSING DCV-50
- o VERIFY "A" DC SYSTEM RADIATION MONITOR, RML-5 READING IS NORMAL
- O IF ON DECAY HEAT REFER TO AP-404
- o CONSIDERATION SHOULD BE GIVEN TO ALTERNATING DH TRAINS PER OP-404

DISCUSSION:

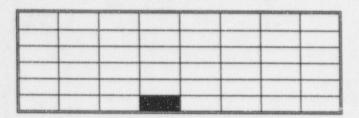
IF THE HIGH SURGE TANK LEVEL IS DUE TO A DH TO DC LEAK THEN THE DC SURGE TANK MAY CONTINUE TO FILL. THE DC SURGE TANK VENTS TO THE AUX BLDG VENT HEADER SO CONSIDERATION SHOULD BE GIVEN TO DRAINING DC TO THE AUX BLDG SUMP TO PREVENT OVERFLOWING THE TANK TO THE VENT DUCT AND ALIGNING THE DC SURGE TANK VENT TO THE WASTE GAS SYSTEM.

DC SURGE TANK FILL VALVE, DCV-10 SHOULD OPEN AT 8'6" AND CLOSE AT 11'0"

REFERENCES: DRAWING 208-019 SHEET DC-03

SENSING ELEMENT: DC-48-LS

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DC TANK A LEVEL HIGH/LOW

EVENT POINT 0205

INDICATED CONDITION:

o "A" DC SURGE TANK LEVEL IS <8'6" AS SENSED BY DC-48-LS

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o DC SURGE TANK LEVEL INDICATION, DC-50-LI
- o LOCAL SURGE TANK LEVEL INDICATION
- o OSCILLATING CURRENT INDICATIONS ON DCP-1A

OPERATOR ACTIONS FOR A VALID ALARM:

- o VERIFY AUTOMATIC DC SURGE TANK FILL VALVE, DCV-10 IS OPEN
- O HAVE AUX BLDG OPERATOR FILL DC SURGE TANK LOCALLY
- o CONSIDERATION SHOULD BE GIVEN TO ALTERNATE DH TRAINS PER OP-404

DISCUSSION:

FILL SOURCE FOR DC SURGE TANK IS UNIT 1/2 DEMIN WATER

DC SURGE TANK FILL VALVE, DCV-10 SHOULD OPEN AT 8'6" AND CLOSE AT 11'0"

REFERENCES: DRAWING 208-019 SHEET DC-03

SENSING ELEMENT: DC-48-LS

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RC LOOP A VENT VALVES OPEN

EVENT POINT 1878

INDICATED CONDITION:

o BOTH "A" LOOP VENT VALVES, RCV-157 AND RCV-158 OR BOTH PRESSURIZER VENT VALVES, RCV-159 AND RCV-160 ARE ENERGIZED.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- O LOOP OR PRESSURIZER VENT VALVE POSITION INDICATION IS OPEN ON MCB
- O LOOP OR PRESSURIZER VENT VALVE FLOW INDICATION WHITE INDICATING LIGHT IS
- o RCS PRESSURE DECREASING

OPERATOR ACTIONS FOR A VALID ALARM:

o CLOSE THE OPEN VALVES IF NECESSARY

DISCUSSION:

OPENING ONLY ONE VALVE SHOULD NOT CAUSE AN RCS LEAK SINCE EACH PAIR ARE MOUNTED IN SERIES

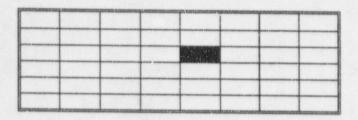
REFERENCES: DRAWING 208-047 SHEET RC-32 AND RC-34

SENSING ELEMENT: POSITION SWITCH ON VALVES (33)

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AH FAN 15A TROUBLE

EVENT POINT 0395

INDICATED CONDITION:

O AHF-15A BREAKER OPEN AND CONTROL HANDLE IN THE NORMAL AFTER START POSITION.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- O GREEN LIGHT WITH A RED FLAG ON CONTROL STATION
- O AMBER ES STATUS LIGHT

OPERATOR ACTIONS FOR A VALID ALARM:

- o START AHF-15B
- O INVESTIGATE CAUSE OF AIR HANDLING FAN TRIP.

DISCUSSION:

AHF-15A IS THE COOLING FAN FOR DCP-1A AND DCP-1B. THE PUMPS NORMALLY OPERATE WITHOUT EITHER AIR HANDLING FAN IN OPERATION BUT ARE REQUIRED DURING ACCIDENT SCENARIOS WHEN HEAT LOAD IN THE SEA WATER ROOM IS HIGH.

REFERENCES: DRAWING 208-005 SHEET AH-42

SENSING ELEMENT: CONTACTS ON CONTROL HANDLE AND RUN INDICATION (42/15CR)

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ESA-KW1-05-03

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AH FAN 15A TROUBLE

EVENT POINT 0396

INDICATED CONDITION:

O AHF-15A AIR FLOW IS <0.07" HO AS SENSED BY AH-27-DPS AND THE CONTROL HANDLE IS IN NORMAL AFTER START.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

OPERATOR ACTIONS FOR A VALID ALARM:

- o START AHF-15B
- O INVESTIGATE CAUSE OF LOW AIR FLOW

DISCUSSION:

AHF-15A IS THE COOLING FAN FOR DCP-1A AND DCP-1B. THE PUMPS NORMALLY OPERATE WITHOUT EITHER AIR HANDLING FAN IN OPERATION BUT ARE REQUIRED DURING ACCIDENT SCENARIOS WHEN HEAT LOAD IN THE SEA WATER ROOM IS HIGH. PRIMARY PLANT OPERATOR MAY CHECK LOCAL DIFFERENTIAL PRESSURE GAUGES AH-597-DPI (AHF-15A) AND AH-598-DPI (AHF-15B) TO DETERMINE FILTER AIR FLOW CONDITIONS.

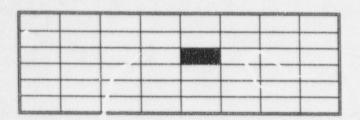
REFERENCES: DRAWING 208-005 SHEET AH-42

SENSING ELEMENT: CONTACTS ON CONTROL HANDLE AND AH-27-DPS

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ESA-KW1-05-03

A-05-03



AH FAN 15A TROUBLE

EVENT POINT 0397

INDICATED CONDITION:

o AHF-15A DISCHARGE DUCT TEMPERATURE IS >135°F AS SENSED BY AH-315-TS

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o AHF-15A TRIPS
- O AHF-15A WHITE TEMPERATURE PERMISSIVE LIGHT IS OFF

OPERATOR ACTIONS FOR A VALID ALARM:

- O INVESTIGATE CAUSE OF HIGH DUCT TEMPERATURE
- o DO NOT ATTEMPT A START OF AHF-15B UNTIL CAUSE OF HIGH TEMP IS DETERMINED

DISCUSSION:

THIS CONDITION MAY INDICATE A FIRE IN THE EXHAUST DUCTWORK OF AHF-15A.

IF A FIRE CONDITION DOES EXIST REFER TO AP-880 FOR FURTHER GUIDANCE.

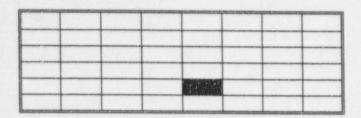
REFERENCES: DRAWING 208-005 SHEET AH-42

SENSING ELEMENT: AH-315-TS

ESA ANNUNCIATOR RESPONSE

ESA-KW1-05-05

A-05-05



DC PUMP A SUCT TEMP HIGH

EVENT POINT 0206

INDICATED CONDITION:

o DCP-1A SUCTION TEMPERATURE IS >105°F AS SENSED BY DC-57-TS

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o DCP-1A SUCTION TEMP INDICATION, DC-35-TI
- o DC RAW WATER TEMPERATURE INDICATOR RW-13-TI OR RW-33-TI
- o DH COOLER TEMPERATURE INDICATORS DH-2-TI1 OR DH-6-TI1

OPERATOR ACTIONS FOR A VALID ALARM:

- o ENSURE RWP-3A RUNNING
- o VERIFY RAW WATER DELTA TEMP FOR DC HEAT EXCHANGER IS <10°
- O IF "A" DC TRAIN TEMPERATURE CANNOT BE REDUCED THEN CONSIDERATION SHOULD BE GIVEN TO ALTERNATING DECAY HEAT TRAINS PER OP-404.

DISCUSSION:

THIS CONDITION MAY INDICATE A FOULED DC HEAT EXCHANGER. INDICATIONS ARE: HIGH RWP-3A DISCHARGE PRESSURE, HIGH RW DIFFERENTIAL TEMP OR LOW DC DIFFERENTIAL TEMP ACROSS THE DC HEAT EXCHANGER. ALSO VENTING THE DC HEAT EXCHANGER SHOULD BE CONSIDERED.

IF DC PUMP HAS TO BE TRIPPED AFTER AN ES ACTUATION, HPI SEAL IN RESET MUST BE DEPRESSED BEFORE THE PUMP CAN BE SECURED.

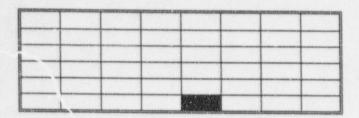
REFERENCES: DRAWING 208-019 SHEET DC-03

SENSING ELEMENT: DC-57-TS

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BS/DH PUMP A DC FLOW LOW

EVENT POINT 1220

INDICATED CONDITION:

O DECAY HEAT PUMP 1A DC FLOW IS <30 GPM AS SENSED BY DC-67-FIS WITH DHP-1A BKR CLOSED

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- O DECAY HEAT PUMP LOCAL DC FLOW INDICATOR INDICATES LOW FLOW
- o COMPUTER POINT X-320 WHICH MONITORS DHP-1A MOTOR STATOR TEMP
- o COMPUTER GROUP 73

OPERATOR ACTIONS FOR A VALID ALARM:

- o ENSURE DCP-1A RUNNING
- o INCREASE FLOW TO DHP-1A BY THROTTLING DCV-35 OR DCV-95 AS REQUIRED

DISCUSSION:

THE MAXIMUM ALLOWABLE DH PUMP MOTOR STATOR TEMP IS 265°F (129.4°C AS READ ON COMPUTER POINT X320). CONSIDERATION SHOULD BE MADE IN SHUTTING DOWN THE PUMP IF THIS TEMP IS REACHED. DCV-35 AND DCV-95 ARE SEALED THROTTLED VALVES, IF CHANGES ARE MADE TO THEIR POSITION ADMINISTRATIVE MEASURES MUST BE CONSIDERED.

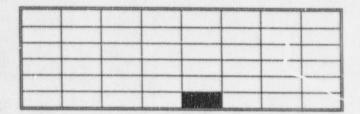
REFERENCES: DRAWING 208-019 SHEET DC-03

SENSING ELEMENT: DC-67-FIS

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ESA-KW1-05-06



BS/DH PUMP A DC FLOW LOW

EVENT POINT 1222

INDICATED CONDITION:

O BUILDING SPRAY PUMP 1A DC FLOW IS <25 GPM AS SENSED BY DC-73-FIS WITH BSP-1A BKR CLOSED

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- O BUILDING SPRAY PUMP LOCAL DC FLOW INDICATOR INDICATES LOW FLOW
- o COMPUTER POINT X-314 WHICH MONITORS BSP-1A MOTOR STATOR TEMP
- o COMPUTER GROUP 82

OPERATOR ACTIONS FOR A VALID ALARM:

- o ENSURE DCP-1A RUNNING
- o INCREASE FLOW TO BSP-1A BY THROTTLING DCV-33

DISCUSSION:

THE MAXIMUM ALLOWABLE BS PUMP MOTOR STATOR TEMP IS 300°F (149°C), AS READ ON COMPUTER POINT X-314. CONSIDERATION SHOULD BE MADE IN SHUTTING DOWN THE PUMP IF THIS TEMP IS REACHED.

DCV-33 IS A SEALED THROTTLED VALVE. IF CHANGES ARE MADE TO ITS POSITION, ADMINISTRATIVE MEASURES MUST BE CONSIDERED.

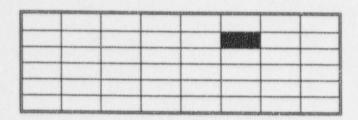
REFERENCES: DRAWING 208-019 SHEET DC-03

SENSING ELEMENT: DC-73-FIS

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ESA-KW1-06-02

A-06-02



DH RW PUMP A

EVENT POINT 0014

INDICATED CONDITION:

O RWP-3A BREAKER IS OPEN WITH CONTROL HANDLE IN THE NORMAL AFTER START POSITION.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o GREEN LIGHT WITH RED FLAG ON CONTROL STATION
- o AMBER ES STATUS LIGHT

OPERATOR ACTIONS FOR A VALID ALARM:

o CONSIDERATION SHOULD BE GIVEN TO ALTERNATING DECAY HEAT TRAINS PER -404

DISCUSSION:

THE AMOUNT OF DECAY HEAT LOAD AND THE INITIAL TEMPERATURE OF SYSTEM WILL DETERMINE HOW FAST THE DECAY HEAT TRAINS SHOULD BE TRANSFERRED.

REFER TO TS FOR ADMINISTRATIVE REQUIREMENTS.

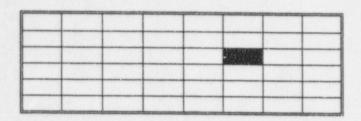
REFERENCES: DRAWING 208-050 SHEET RW-04

SENSING ELEMENT: 52S/B, 52H/A, CS/SC, CS/O

ESA	ANNUNCIATOR	RESPONSE

ESA-KW1-06-03

A-06-03



DH RW PUMP A MOTOR OVERLOAD

EVENT POINT 0013

INDICATED CONDITION

O RWP-3A MOTOR AMPS >115% RATED LOAD

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- O HIGH MOTOR AMPS
- o RWP-3A TRIPS

OPERATOR ACTIONS FOR A VALID ALARM:

- O HAVE BREAKER CUBICLE CHECKED FOR DROPPED TARGETS
- O CONSIDERATION SHOULD BE GIVEN TO ALTERNATING DECAY HEAT TRAINS PER OP-04

DISCUSSION:

THIS ALARM INDICATES THAT EITHER THE TIMED OVERCURRENT OR THE INSTANTANEOUS OVERCURRENT PROTECTIVE DEVICES HAVE ACTUATED. INSTANTANEOUS OVERCURRENT PROTECTIVE RELAY ACTUATION WILL TRIP THE BREAKER.

IT IS POSSIBLE TO HAVE THIS ALARM PRIOR TO THE BREAKER TRIP.

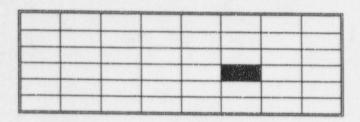
REFERENCES: DRAWING 208-050 SHEET RW-02

SENSING ELEMENT: RELAY 51

ESA ANNUNCIATOR RESPONSE

ESA-KW1-06-04

A-06-04



DH RW PUMP A OUT OF SERVICE

EVENT POINT 0012

INDICATED CONDITION:

o RWP-3A BREAKER HAS NO DC CONTROL POWER

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- O NO INDICATING LIGHTS ON CONTROL STATION
- O ES STATUS LIGHTS INDICATE BREAKER POSITION

OPERATOR ACTIONS FOR A VALID ALARM:

- o VERIFY CLOSED DPDP-5A SWITCH 10
- O VERIFY DC KNIFE SWITCH FOR RWP-3A BREAKER CLOSED

DISCUSSION:

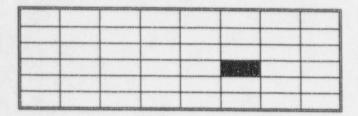
THIS CONDITION DISABLES REMOTE BREAKER OPERATION AND PROTECTIVE RELAYING. REFER TO OP-703 FOR INSTRUCTIONS ON LOCAL BREAKER OPERATION. THIS IS AN EXPECTED ALARM FOR BREAKER TAGGING OPERATIONS.

REFER TO TS FOR ADMINISTRATIVE REQUIREMENTS.

REFERENCES: DRAWING 208-050 SHEET RW-04

SENSING ELEMENT: RELAY 27C LOCATED INSIDE BREAKER CUBICLE FOR RWP-3A

ESA ANNUNCIATOR RESPONSE	ESA-KW1-06-04	A-06-04
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DH RW PUMP A OUT OF SERVICE

EVENT POINT 0015

INDICATED CONDITION:

o RWP-3A BREAKER IS RACKED OUT

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- O NO INDICATING LIGHTS ON CONTROL STATION
- O NO ES STATUS INDICATION

OPERATOR ACTIONS FOR A VALID ALARM:

O INVESTIGATE THE CAUSE FOR BREAKER BEING RACKED OUT

DISCUSSION:

THIS IS AN EXPECTED ALARM FOR BREAKER TAGGING OPERATIONS.

REFER TO TS FOR ADMINISTRATIVE REQUIREMENTS.

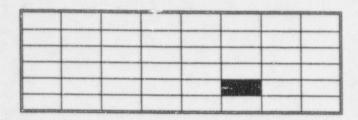
REFERENCES: DRAWING 208-050 SHEET RW-04

SENSING ELEMENT: CONTACT 52H/b IN BREAKER CUBICLE FOR RWP-3A

ESA ANNUNCIATOR RESPONSE	
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ESA-KW1-06-05

A-06-05



DH RW PUMP A DISCH PRESS LOW

EVENT POINT 0020

INDICATED CONDITION:

O WP-3A DISCHARGE PRESS <15 PSIG AS SENSED BY RW-62-PS WITH PUMP BREAKER CLOSED

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

o RWP-3A DISCHARGE PRESSURE INDICATION, RW-9-PI

OPERATOR ACTIONS FOR A VALID ALARM:

- O MONITOR PUMP CONTROL STATION CURRENT METER
- o SECURE PUMP IF SIGNS OF CAVITATION ARE EVIDENT

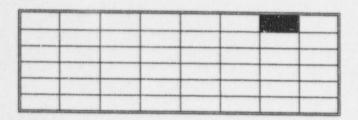
DISCUSSION:

CONSIDERATION SHOULD BE GIVEN TO PLACING THE ALTERNATE DECAY HEAT TRAIN IN SERVICE PER OP-404.

REFERENCES: DRAWING 208-050 SHEET RW-04

SENSING ELEMENT: CONTACT 52S/A, RW-62-PS

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RB ISOLATION ES A ACTUATION

EVENT POINT 0931

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o RB ISOLATION ACTUATION "A"

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o RB PRESSURE >4 PSIG
- O MANUAL ACTUATION OF RB ISOLATION AND COOLING
- O ES STATUS LIGHTS FOR AFFECTED CHANNELS CHANGE STATE

OPERATOR ACTIONS FOR A VALID ALARM:

o REFER TO EOP

DISCUSSION:

THIS INDICATES THAT THERE IS AN A SIDE RB ISOLATION ACTUATION ON TWO OUT OF THREE OF THE CIRCUITS, OR AN A SIDE MANUAL RB ISOLATION ACTUATION RB PRESSURE BI-STABLE WILL TRIP AT \geq 3.34 +/- 0.2 PSIG AS SENSED BY BS-24/25/26-PS

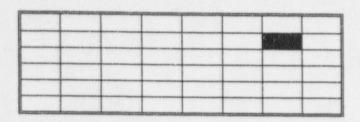
REFERENCES: DRAWING 208-029 SHEET ESA-55

SENSING ELEMENT: 63Z1/RB1, 63Z1/RB2, 63Z/RB3, OR 1X1F/RBA, BS-24-PS, BS-25-PS, BS-26-PS

ESA ANNUNCIATOR RESPONSE

ESA-KW1-07-02

A-07-02



SW PUMP A

EVENT POINT 1825

INDICATED CONDITION:

O SWP-1A BREAKER IS OPEN WITH CONTROL SWITCH IN THE NORMAL AFTER START POSITION

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- O GREEN LIGHT WITH RED FLAG ON CONTROL STATION
- O AMBER ES STATUS LIGHT

OPERATOR ACTIONS FOR A VALID ALARM:

- o START SWP-1E
- O HAVE BREAKER CUBICLE CHECKED FOR DROPPED TARGETS
- o REFER TO AP-330

DISCUSSION:

EXERCISE CARE WHEN STARTING ALTERNATE SW PUMPS. ENSURE ANY FAILURES SUCH AS IMPROPER FLOW PATH OR SURGE TANK VOLUME, WHICH MAY HAVE DIRECTLY OR INDIRECTLY HAVE CAUSED THIS PUMP TO TRIP DO NOT CAUSE ALTERNATE PUMPS TO TRIP AFTER THEY ARE STARTED. ADDRESS TS REQUIREMENTS.

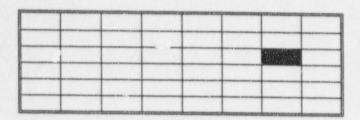
REFERENCES: DRAWING 208-056 SHEET SW-02

SENSING ELEMENT: 52S/B, 52H/A, CS/SC, CS/O

ESA	ANNUNCIATOR	RESPONSE
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ESA-KW1-07-03

A-07-03



SW PUMP A MOTOR OVERLOAD

EVENT POINT 1824

INDICATED CONDITION:

o SWP-1A MOTOR AMPS ≥ 115% RATED LOAD.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- O HIGH MOTOR AMPS
- o SWP-1A TRIPS

OPERATOR ACTIONS FOR A VALID ALARM:

- o START SWP-18
- O HAVE BREAKER CUBICLE CHECKED FOR DROPPED TARGETS

DISCUSSION:

THIS ALARM INDICATES THAT EITHER THE TIMED OVERCURRENT OR THE INSTANTANEOUS OVERCURRENT PROTECTIVE DEVICES HAVE ACTUATED.

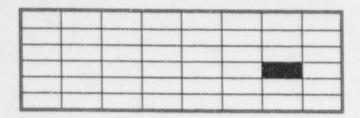
INSTANTANEOUS OVERCURRENT PROTECTIVE RELAY ACTUATION WILL TRIP THE BREAKLR.

IT IS POSSIBLE TO HAVE THIS ALARM PRIOR TO THE BREAKER TRIP.

REFERENCES: DRAWING 208-056 SHEET SW-02

SENSING ELEMENT: RELAY 51

ESA ANNUNCIATOR RESPONSE	ESA-KW1-07-04	A-07-04
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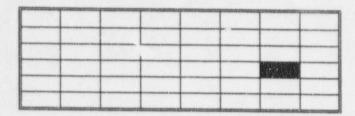
SW PUMP A OUT OF SERVICE

EVENT POINT 1826

INDICATED CONDITION: o SWP-1A BREAKER RACKED OUT REDUNDANT INDICATION WHICH WILL VERIFY ALARM: o NO INDICATING LIGHT ON CONTROL STATION o NO ES STATUS INDICATION OPERATOR ACTIONS FOR A VALID ALARM: o INVESTIGATE THE CAUSE FOR BREAKER BEING RACKED OUT DISCUSSION: REFER TO TS FOR ADMINISTRATIVE REQUIREMENTS.

SENSING ELEMENT: CONTACT 52H/b IN BREAKER CUBICLE

ESA ANNUNCIATOR RESPONSE	ESA-KW1-07-04	A-07-04
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SW PUMP A OUT OF SERVICE

EVENT POINT 1853

INDICATED CONDITION:

O SWP-1A BREAKER HAS NO DC CONTROL POWER

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- O NO INDICATING LIGHTS ON CONTROL STATION
- O ES STATUS LIGHTS INDICATE BREAKER POSITION

OPERATOR ACTIONS FOR A VALID ALARM:

- o VERIFY CLOSED DPDP-5A SWITCH 10
- O VERIFY DC KNIFE SWITCH FOR SWP-1A IS CLOSED

DISCUSSION:

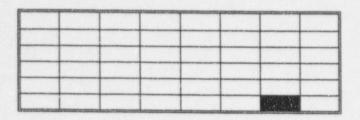
THIS CONDITION DISABLES REMOTE BREAKER OPERATION AND PROTECTIVE RELAYING. REFER TO OP-703 FOR INSTRUCTIONS ON LOCAL BREAKER OPERATION. THIS IS AN EXPECTED ALARM FOR BREAKER TAGGING OPERATIONS.

REFER TO TS FOR ADMINISTRATIVE REQUIREMENTS.

REFERENCES: DRAWING 208-050 SHEET SW-02

SENSING ELEMENT: RELAY 27C LOCATED INSIDE BREAKER CUBICLE FOR SWP-1A

ESA ANNUNCIATOR RESPONSE	ESA-KW1-07-06	A-07-06
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SW PUMP A LOCKED OUT

EVENT POINT 1800

INDICATED CONDITION:
o SWP-1A CONTROL HANDLE IN PULL-TO-LOCK POSITION
REDUNDANT INDICATION WHICH WILL VERIFY ALARM:
o SWP-1A CONTROL HANDLE ON MCB
OPERATOR ACTIONS FOR A VALID ALARM:
o REFER TO AP-330
DISCUSSION:
REFERENCES: DRAWING 208-056 SHEET SW-02
SENSING ELEMENT: CB-ESFA-ML4

A-08-01

ESA-KW1-08-01

	SW RW PUMP A LOCKED OUT
	EVENT POINT 1801
INDICATED CONDITION:	
O RWP-2A CONTROL HANDLE IN PULL-TO-LOCK F	

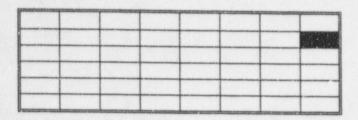
REFERENCES: DRAWING 208-050 SHEET RW-02

ESA ANNUNCIATOR RESPONSE

SENSING ELEMENT: CB-ESFA-MK4

DISCUSSION:

ESA ANNUNCIATOR RESPONSE	ESA-KW1-08-02	A-08-02
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SW RW PUMP A

EVENT POINT 0005

INDICATED CONDITION:

O RWP-2A BREAKER IS OPEN WITH CONTROL HANDLE IN THE NORMAL AFTER START POSITION

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- O GREEN LIGHT WITH A RED FLAG ON THE CONTROL STATION
- O AMBER ES STATUS LIGHT

OPERATOR ACTIONS FOR A VALID ALARM:

- O ENSURE RWP-2B HAS STARTED
- O HAVE BREAKER CUBICLE CHECKED FOR DROPPED TARGETS

DISCUSSION:

ENSURE A COMMON FAILURE DOES NOT RENDER RWP-28 INOPERABLE/UNAVAILABLE.

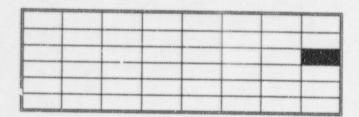
REFER TO TS FOR ADMINISTRATIVE REQUIREMENTS.

REFERENCES: DRAWING 208-050 SHEET RW-02

SENSING ELEMENT: 525/B, 52H/A, CS/SC, CS/O CONTACTS

ENCLOSURE 1 (Page 51 of 54)

ESA ANNUNCIATOR RESPONSE ESA-KW1-08-03 A-08-03



SW RW PUMP A MOTOR OVERLOAD

EVENT POINT 0004

INDICATED CONDITION

o RWP-2A MOTOR AMPS > 115% RATED LOAD

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o RWP-2A HIGH MOTOR AMPS
- o RWP-2A TRIP

OPERATOR ACTIONS FOR A VALID ALARM:

- o START RWP-2B
- O HAVE BREAKER CUBICLE CHECKED FOR DROPPED TARGETS

DISCUSSION:

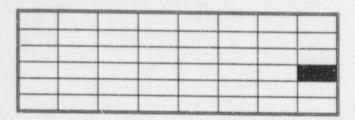
THIS ALARM INDICATES THAT EITHER THE TIMED OVERCURRENT OR THE INSTANTANEOUS OVERCURRENT PROTECTIVE DEVICES HAVE ACTUATED. INSTANTANEOUS OVERCURRENT PROTECTIVE RELAY ACTUATION WILL TRIP THE BREAKER.

IT IS POSSIBLE TO HAVE THIS ALARM PRIOR TO THE BREAKER TRIP.

REFERENCES: DRAWING 208-050 SHEET RW-02

SENSING ELEMENT: FELAY 51

ESA	ANNUNCIATOR	RESPONSE	ESA-KW1-08-04	A-08-04
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SW RW PUMP A OUT OF SERVICE

EVENT POINT 0003

INDICATED CONDITION:

O RWP-2A BREAKER HAS NO DC CONTROL POWER

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- o NO INDICATING LIGHTS ON RWP-2A CONTROL STATION
- O ES STATUS LIGHTS INDICATE BREAKER POSITION

OPERATOR ACTIONS FOR A VALID ALARM:

- o VERIFY CLOSED DPDP-5A SWITCH 10
- O VERIFY DC KNIFE SWITCH FOR RWP-2A BREAKER IS CLOSED

DISCUSSION:

THIS CONDITION DISABLES REMOTE BREAKER OPERATION AND PROTECTIVE RELAYING. REFER TO OP-703 FOR INSTRUCTIONS ON LOCAL BREAKER OPERATION. THIS IS AN EXPECTED ALARM FOR BREAKER TAGGING OPERATIONS.

REFER TO TS FOR ADMINISTRATIVE REQUIREMENTS.

REFERENCES: DRAWING 208-050 SHEET RW-02

SENSING ELEMENT: RELAY 27C LOCATED INSIDE BREAKER CUBICLE FOR RWP-2A

ESA ANNUNCIATOR RESPONSE	ESA-KW1-08-04	A-08-04
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SW RW PUMP A OUT OF SERVICE

EVENT POINT 0022

INDICATED CONDITION:
o RWP-2A IS BREAKER RACKED OUT
REDUNDANT INDICATION WHICH WILL VERIFY ALARM:
o NO INDICATING LIGHTS ON RWP-2A CONTROL STATION O NO ES STATUS INDICATION FOR RWP-2A
OPERATOR ACTIONS FOR A VALID ALARM:
O INVESTIGATE THE CAUSE FOR BREAKER BEING RACKED OUT
DISCUSSION

DISCUSSION:

REFER TO TS FOR ADMINISTRATIVE REQUIREMENTS.

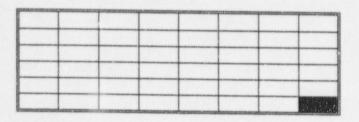
REFERENCES: DRAWING 208-050 SHEET RW-02

SENSING ELEMENT: CONTACT 52H/b IN BREAKER CUBICLE FOR RWP-2A

ESA ANNUNCIATOR RESPONSE

ESA-KW1-08-06

A-08-06



ES A ACTUATION TEST BYPASS

EVENT POINT 0769

INDICA CONDITION:

O ANY ES "A" TEST SELECTOR SWITCH NOT IN THE "OFF PUSHED IN" POSITION.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

O RED "MONTHLY TEST" OR RED "REFUELING TEST" LIGHT ILLUMINATED ON ONE OR MORE OF THE FOLLOWING SWITCHES:

HPI AUTO TEST SELECT SWITCH "A"
LPI AUTO TEST SELECT SWITCH "A"
RB ISO AUTO TEST SELECT SWITCH "A"

OPERATOR ACTIONS FOR A VALID ALARM:

O REFER TO SP-358A, SP-358B, OR SP-358C AS APPLICABLE, TO RESTORE AFFECTED SWITCH

DISCUSSION:

THIS ALARM INDICATES THAT ES SYSTEMS MAY NOT FUNCTION PROPERLY ON AN AUTOMATIC OR MANUAL ES ACTUATION.

REFERENCES: DRAWING 208-028 SHEET ESAB-06

SENSING ELEMENT: TS4/RCA, SS4/RCA, SS4/RBA