

Turkey Point 2017-301

Post Exam Comments

- 1) Applicant Comment (Q89)
- 2) Supporting Documentation for Applicant Comment (Q89)
- 3) Facility Position (Q89)
- 4) Supporting Documentation for Facility Position (Q89)
- 5) Facility Comment (Q34)
- 6) Supporting Documentation for Facility Comment (Q34)
- 7) Facility Comment (Q94)
- 8) Supporting Documentation for Facility Comment (Q94)

1) Applicant Comment (Q89)

Question 89 Contention:

Question 89 presented the applicants with a situation in which the ICW/CCW Basket Strainer was being backwashed at the same time as the ICW/TPCW Backwash Strainer. As stated in the stem of the question, during the subsequent restoration, 4-50-324, ICW/CCW BASKET STRAINER A INLET ISOLATION, experiences a sheared pin (handwheel spins freely) and remained closed, and POV-4-4883, ICW/TPCW HEADER B ISOLATION VALVE, failed closed and would not reopen. The question then asks the student if the limitations of strainer backwashing per 4-NOP-019 (ARE/ARE NOT) violated; and if the Unit 4 Unit Supervisor (IS/IS NOT) required to be in HOT SHUTDOWN within the following 13 hours.

I chose answer (B) for the Limitations of 4-NOP-019 ARE violated, and the Unit Supervisor IS NOT required to be in HOT SHUTDOWN within 13 hours. The keyed answer was (D) in which the answer stated the Limitations of 4-NOP-019 ARE NOT violated, and Unit Supervisor IS NOT required to be in HOT SHUTDOWN within 13 hours.

Question 89 is not being contended for the second part of the question. I agree that Unit 4 is NOT in a Shutdown Action in accordance with Technical Specification 3.0.3. However, I am contending that the answer for the first part of Question 89 is incorrect.

The limitations of 4-NOP-019 pertaining to the Basket Strainers are found in section 2.2.3.3. Limitation 2.2.3.3 states as follows: "While isolating an ICW/CCW Strainer, ICW flows below "Minimum Required ICW/CCW Flowrate" are permitted for **up to 5 minutes**, without declaring ICW System inoperable. If flow is below the "Minimum Required ICW/CCW Flowrate" for **greater than 5 minutes**, then the ICW system shall be declared inoperable at the time when flow initially went below the "Minimum Required ICW/CCW Flowrate."

The Initial Conditions/Stem of the question state that valve 4-50-324 has a sheared pin and the valve remains closed. However, there is no definitive indication about time, which leaves the applicant to determine if the valve can be opened within 5 minutes to comply with Limitation 2.2.3.3. Indications show that the valve's pin has sheared (handwheel spins freely) and the valve remains closed. Valve 4-50-324 is a manual operating valve and has no other means to operate the valve in the open direction. See attached P&ID, isometric drawing, and picture of valve 4-50-324.

There is no reasonable assumption that the valve can be opened within 5 minutes to comply with the limitation provided in the procedure. Therefore, I came to the answer that the limitation to backwash for less than 5 minutes IS violated and thus answer (B) was chosen to reflect this condition. NUREG 1021-Revision 11 Section D.1 states that "newly discovered technical information that supports a change in the answer key" can be used as a reason to support taking two answers for this question or for the removal of this question.

2) Supporting Documentation for Applicant Comment (Q89)



FPL

TURKEY POINT UNIT 4

NORMAL OPERATING PROCEDURE

**SAFETY RELATED
CONTINUOUS USE**

Procedure No.

4-NOP-019

Revision No.

24

Title:

INTAKE COOLING WATER SYSTEM

Responsible Department: **OPERATIONS**

Special Considerations:

FOR INFORMATION ONLY

Before use, verify revision and change documentation
(if applicable) with a controlled index or document.
DATE VERIFIED _____ INITIAL _____

Revision

Approved By

Approval Date

UNIT #

UNIT 4

DATE

DOCT

PROCEDURE

DOCN

4-NOP-019

SYS

STATUS

COMPLETED

REV

24

OF PGS

0

Alvin Robertson

10/13/08

24

Mike Murphy

05/18/17

| | | |
|-----------------------------|---|-------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM | PAGE: 2 of 158 |
| PROCEDURE NO.: 4-NOP-019 | TURKEY POINT UNIT 4 | |

| REVISION SUMMARY | |
|------------------|--|
| Rev. No. | Description |
| 24 | <p>PCR 2098806, 05/18/17, Chris Roda</p> <p>Updates guidance for the operation of the permanent Chilled U5 Well Water Injection to the U4 ICW system as installed by EC 283870.</p> <p>PCR 2183336, 05/01/17, Michael Murphy</p> <p>Change supports use of certain sections to perform valve stroking in accordance with PM.</p> |
| 23 | <p>PCR 2184279, 02/14/17, Troy Skillen</p> <p>Procedure 4-NOP-019 needs to be updated to support partial turnover four of EC 283870. This PTOPI installs two new valves and temporarily disables the capability to backwash ICW/CCW basket strainer BS-4-1402.</p> <p>PCR 2162755, 01/27/17, Edward Tremblay</p> <p>In Section 5.17, Step 3, revises recording the maximum allowable CCW outlet temperatures as obtained from STA or Unit Supervisor, to recording the current CCW outlet temperature; the CAUTION above states CCW outlet from CCW HXs shall NOT exceed 110°F.</p> |
| 22 | <p>PCR 2184278, 02/10/17, Troy Skillen</p> <p>Procedure 4-NOP-019 needs to be updated to support partial turnover three of EC 283870. This PTOPI installs two new valves and temporarily disables the capability to backwash ICW/CCW basket strainer BS-4-1403.</p> |
| 21C | <p>PCR 2155554, 11/17/16, Arturo Alvarez</p> <p>Revising various procedures to remove the () hour statement and replace with the actual Technical Specification Action Statement required in accordance with AR# 2006311.</p> |
| 21B | <p>PCR 2165716, 11/01/16, Chris Needham</p> <p>Editorial per AR 2146943-13, review OP and NOPs procedures listed on Attachment 10 of AD-AA-100-1003 to ensure words from the "List of Words to Avoid" are presented in a manner that specifies the method of control.</p> |

| | | |
|-----------------------------|--|-----------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM TURKEY POINT UNIT 4 | PAGE: 3 of 158 |
| PROCEDURE NO.: 4-NOP-019 | | |

TABLE OF CONTENTS

| <u>SECTION</u> | <u>PAGE</u> |
|--|-------------|
| 1.0 PURPOSE..... | 5 |
| 2.0 PRECAUTIONS AND LIMITATIONS..... | 5 |
| 3.0 PREREQUISITES | 10 |
| 4.0 NORMAL OPERATIONS..... | 11 |
| 4.1 Startup | 11 |
| 4.1.1 ICW System Startup | 11 |
| 4.1.2 Pump Startup During System Operation | 26 |
| 4.2 Operation..... | 29 |
| 4.2.1 Swapping ICW Pumps..... | 29 |
| 4.3 Shutdown | 32 |
| 4.3.1 Shutdown of an ICW Pump for Maintenance..... | 32 |
| 5.0 INFREQUENT OPERATIONS..... | 33 |
| 5.1 ICW / CCW 4A Basket Strainer Backwash | 33 |
| 5.2 ICW / CCW 4B Basket Strainer Backwash | 38 |
| 5.3 ICW / CCW 4A Basket Strainer Full Flow Backwash..... | 44 |
| 5.4 ICW / CCW 4B Basket Strainer Full Flow Backwash..... | 50 |
| 5.5 ICW / TPCW 4A Basket Strainer Backwash | 56 |
| 5.6 ICW / TPCW 4B Basket Strainer Backwash | 59 |
| 5.7 ICW / TPCW 4A Basket Strainer Alternate Backwash..... | 62 |
| 5.8 ICW / TPCW 4B Basket Strainer Alternate Backwash..... | 65 |
| 5.9 ICW / CCW 4A Basket Strainer Removal from Service for Mechanical Cleaning | 68 |
| 5.10 ICW / CCW 4B Basket Strainer Removal from Service for Mechanical Cleaning | 74 |
| 5.11 ICW / TPCW 4A Basket Strainer Removal from Service for Mechanical Cleaning | 81 |
| 5.12 ICW / TPCW 4B Basket Strainer Removal from Service for Mechanical Cleaning | 85 |
| 5.13 Single ICW Pump Operations..... | 89 |
| 5.14 Restoring from Single ICW Pump Operations | 91 |
| 5.15 Restoration of ICW to TPCW HXs | 92 |
| 5.16 Operation with One ICW/CCW HX Out of Service..... | 95 |
| 5.17 CCW Heat Exchanger Flushing..... | 98 |
| 5.18 Starting ICW Pumps from 4160V Switchgear Rooms..... | 104 |
| 5.19 Actions to Mitigate Fluttering of a Butterfly Valve | 105 |
| 5.20 ICW / CCW 4A Basket Strainer Combination Flow Backwash | 107 |
| 5.21 ICW / CCW 4B Basket Strainer Combination Flow Backwash | 115 |

| | | |
|-----------------------------|--|-----------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM TURKEY POINT UNIT 4 | PAGE: 4 of 158 |
| PROCEDURE NO.: 4-NOP-019 | | |

TABLE OF CONTENTS
(continued)

| <u>SECTION</u> | <u>PAGE</u> |
|--|-------------|
| 5.22 ICW / TPCW 4A Basket Strainer BS-4-1400 Removal from Service for Mechanical Cleaning Using Direct Control | 123 |
| 5.23 ICW / TPCW 4B Basket Strainer BS-4-1401 Removal from Service for Mechanical Cleaning Using Direct Control | 127 |
| 6.0 RECORDS..... | 131 |
| 7.0 REFERENCES AND COMMITMENTS | 132 |
| <u>ATTACHMENTS</u> | |
| ATTACHMENT 1 Intake Cooling Water System Valve Alignment..... | 137 |
| ATTACHMENT 2 Intake Cooling Water System Control Switch Alignment..... | 148 |
| ATTACHMENT 3 Intake Cooling Water System Breaker Alignment | 150 |
| ATTACHMENT 4 Minimum ICW Flow Rate Curves | 152 |
| ATTACHMENT 5 Instructions for Determining Minimum Flow Using Flow Rate Curves or Manual Calculation..... | 153 |
| ATTACHMENT 6 Grass Influx Evaluation | 155 |
| ATTACHMENT 7 Intake Cooling Water Minimum Flow Verification Data Sheet..... | 157 |
| ATTACHMENT 8 Alternate Method to Determine ICW Flow Through the TPCW Heat Exchangers | 158 |

| | | |
|-----------------------------|---|-----------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM | PAGE: 5 of 158 |
| PROCEDURE NO.: 4-NOP-019 | TURKEY POINT UNIT 4 | |

1.0 PURPOSE

This procedure provides the instructions for operation of the Intake Cooling Water (ICW) System.

2.0 PRECAUTIONS AND LIMITATIONS

2.1 Precautions

2.1.1 General

- While total ICW System flow is greater than 32,000 gpm with two ICW pumps in operation, ICW header pressure may be less than 10 PSIG, causing Annunciator I 4/4 ICW HEADER A/B LO PRESS to alarm.

2.1.2 Basket Strainers

- The Basket Strainer DPs can be misleading on which basket strainer is most clogged since a higher flowrate can also cause a higher DP. If a sudden increase in temperature is noted upon isolating a Basket Strainer, then the Basket Strainer should be restored to service and the alternate Basket Strainer backwashed instead. A third ICW pump can be started if both basket strainers appear to be severely clogged.

2.1.3 CCW and TPCW Heat Exchangers

- Changing ICW flow at any HX may change the flow through the others; therefore, any flow change should be followed by a check of the other flows.
- During startup of U5 Well Water Injection operations or anytime the ICW system lineup is changed, the injection should be throttled to ensure the flow through the heat exchangers does **NOT** exceed the maximum continuous operations flow rate.

| | | |
|-----------------------------|--|-----------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM TURKEY POINT UNIT 4 | PAGE: 6 of 158 |
| PROCEDURE NO.: 4-NOP-019 | | |

2.2 Limitations

2.2.1 General

1. When in MODE 1, 2, 3, and 4, the ICW System shall be OPERABLE with three ICW pumps and two ICW headers.
2. When in MODE 1, 2, 3, and 4, and there are **NOT** two OPERABLE ICW pumps with independent power supplies, then a 72 hour LCO Action Statement is in effect to restore two pumps from independent power supplies to OPERABLE status.
3. When removing an ICW header from service in MODE 1, 2, 3, or 4, a 72 hour LCO Action Statement is in effect until header is returned to service. Because **NO** flow is being diverted away from the CCW HXs, as when a strainer is being backwashed, a continuous watch is **NOT** required to be posted when the header is out of service.
4. When the U5 Well Water Injection is in operation, the ICW System should **NOT** be operated with three ICW pumps. In this condition, the injection flow pushes the flow rate through the CCW HXs over their limit of 10,000 GPM. Momentary flow greater than 10,000 GPM is allowed.

2.2.2 ICW Pumps

1. ICW pumps should **NOT** be operated with water level of the Pump Well lower than 23 feet 2 inches below the centerline of the pump discharge which is 20 feet 8 inches below the Intake floor grating.
2. If ICW pump motor heaters are OOS for more than five days, then Engineering is required to determine pump OPERABILITY.
3. The minimum flow for any ICW pump during continuous operation should be greater than or equal to 3200 gpm.
4. Maximum ICW flowrate to each CCW HX during normal operation should NOT exceed 10,000 gpm per HX during normal three HX operations in order to minimize long term tube side erosion of the CCW HXs. (ref. 5610-019-DB-002)
 - A. The ICW maximum flowrate for each CCW HX may be increased to 12,850 gpm for a 72 hour period to accommodate HX or Basket Strainer cleanings. (ref. 4-NOP-030)
 - B. If flow exceeds 10,000 gpm for more than 72 hours, then a condition report shall be initiated.

| | | |
|-----------------------------|--|-----------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM TURKEY POINT UNIT 4 | PAGE: 7 of 158 |
| PROCEDURE NO.: 4-NOP-019 | | |

2.2.2 ICW Pumps (continued)

4. (continued)

C. ICW flow should be throttled to maintain flow less than 10,000 gpm unless elevated flows are required (it is acceptable to run three ICW pumps with CCW HX flows greater than 10,000 gpm during periods of elevated canal temperature) ref. CR 1987062

5. Maximum ICW Pump flowrate is permitted up to 18,500 gpm. If an ICW Pump is operated in excess of 18,500 gpm, then flow should be reduced to less than 18,500 gpm as soon as possible. If an ICW pump has operated at flows greater than 18,500 gpm for more than twenty (20) minutes, then once pump flow has been reduced to 18,500 gpm or less, the IST Coordinator should be notified to perform vibration and pump DP testing per 4-OSP-019.1, Intake Cooling Water Pump Inservice Test to ensure integrity of the affected pump.
6. Concurrent operation of both the ICW and CW pumps in a single Intake Bay with a Stationary Screen installed is permitted only when determined necessary by Shift Manager or Unit Supervisor to accommodate pump shifting during emergent operating conditions. Such periods of operation shall be limited to as short a duration as possible, and an operator shall be stationed to continuously monitor the intake bay.
7. Operation of either the ICW or the CW pump in a single intake bay with a stationary screen installed is permitted when subject to the following restrictions:
 - A. Prior to placing the ICW pump in service, pump well water levels shall be verified greater than 20 feet 8 inches below the Intake floor grating.
 - B. Fouling of the stationary screen shall be monitored periodically to ensure that minimum required water levels are present. The frequency of the surveillance shall be determined by Shift Manager or Unit Supervisor based on current grass influx rate.
 - C. Any collected debris shall be removed from the stationary screen prior to reaching the minimum required water level.
 - D. If diving activities are being performed on the west side of the stationary screens, then the affected ICW and CW pumps shall be secured and declared out of service during the time the diver remains in the well.

| | | |
|-----------------------------|--|-----------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM TURKEY POINT UNIT 4 | PAGE: 8 of 158 |
| PROCEDURE NO.: 4-NOP-019 | | |

2.2.2 ICW Pumps (continued)

7. (continued)

- E. If diving activities are being performed on the east side of the stationary screens, the affected CW pumps shall be secured during the time the diver remains in the well. There are **NO** specific limitations on ICW pump usage when diving activities are performed on the east side of the stationary screens.
- 8. When starting ICW Pumps, the maximum flow rates for the in-service HXs may be exceeded. The high flow rate is acceptable provided the duration of high flow is minimized.
- 9. If time permits following the raking of an Intake Well, the respective Intake Well CW Pump should operate for at least 1 hour prior to starting the associated ICW Pump.

2.2.3 Basket Strainers

- 1. DP across the ICW Basket Strainers at the CCW HXs should **NOT** exceed 1.5 psid and at the TPCW HXs should **NOT** exceed 2.25 psid.
- 2. The maximum allowable ICW / CCW Basket Strainer element (screening) differential pressure is 10.0 psid per Section 7.1.2, Developmental Reference 6.P. Operation with differential pressures near or at 10.0 psid may challenge the structural integrity of the Basket Strainer element (screening).
- 3. While isolating an ICW/CCW Strainer, ICW flows below "Minimum Required ICW/CCW Flowrate" are permitted for up to 5 minutes, without declaring ICW System inoperable. If flow is below the "Minimum Required ICW/CCW Flowrate" for greater than 5 minutes, then the ICW System shall be declared inoperable at the time when flow initially went below the "Minimum Required ICW/CCW Flowrate."

| | | |
|-----------------------------|--|-----------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM TURKEY POINT UNIT 4 | PAGE: 9 of 158 |
| PROCEDURE NO.: 4-NOP-019 | | |

2.2.4 CCW Heat Exchangers

1. ICW outlet temperature from CCW HXs should **NOT** exceed 120°F.
2. Maximum ICW flowrate to each CCW HX during normal operation should **NOT** exceed 10,000 gpm in order to minimize long term tube side erosion of the CCW HXs. The ICW flowrate for each CCW HX may be increased to 12,850 gpm for up to 72 hours period to accommodate HX or Basket Strainer cleanings.
3. Minimum ICW flowrate to CCW HXs during normal operation should be determined as follows:
 - If three CCW HXs are in service, then the minimum required ICW flow rate is 11,000 gpm TOTAL, and at least 3500 gpm through each CCW HX.
 - If less than three CCW HXs are in service, or flow through any HX is less than 3500 gpm, the Minimum Required ICW/CCW Flowrate will be determined by the STA or Shift Manager per Attachment 5, Instructions for Determining Minimum Flow Using Flow Rate Curves or Manual Calculation.
 - To decrease the Minimum Required ICW/CCW Flowrate, the CCW HX with highest tube resistance may be declared OOS at the discretion of the Shift Manager while the basket strainer is OOS. If a CCW HX is declared OOS, then the ICW flow through that CCW HX can **NOT** be used to calculate the Minimum Required ICW/CCW Flowrate.

2.2.5 TPCW Heat Exchangers

1. ICW outlet temperature from TPCW HXs should **NOT** exceed 105°F.
2. Maximum ICW flowrate to a TPCW HX during normal operation is 12,000 gpm.
3. Minimum ICW flowrate to each in service TPCW HX is 8000 gpm. If flowrate decreases to less than this value, then the System Engineer should be notified.
4. Attachment 8, Alternate Method to Determine ICW Flow Through the TPCW Heat Exchangers, may be used to determine ICW flow through a TPCW HX in the event the normal flow device is unavailable.

| | | |
|-----------------------------|--|------------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM TURKEY POINT UNIT 4 | PAGE: 10 of 158 |
| PROCEDURE NO.: 4-NOP-019 | | |

2.2.5 TPCW Heat Exchangers (continued)

5. One TPCW HX is normally in service and aligned to ICW as described in 4-NOP-008, Turbine Plant Cooling Water.
6. A TPCW HX placed in Standby under 4-NOP-008, Turbine Plant Cooling Water, will be aligned in the following manner:
 - ICW Inlet and Outlet Valves CLOSED
 - ICW Drain and Vents OPEN
7. IF POV-4-4882, ICW to TPCW HEAT EXCHANGERS ISOLATION VALVE, or POV-4-4883, ICW to TPCW HEAT EXCHANGERS ISOLATION VALVE fails to cycle, or cycle outside the accepted stroke time, THEN the valve should be considered inoperable. A 72-hour Action Statement for an inoperable ICW header shall be in effect at any time the inoperable POV is **NOT** closed.

3.0 PREREQUISITES

None

| | | |
|-----------------------------|--|------------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM TURKEY POINT UNIT 4 | PAGE: 33 of 158 |
| PROCEDURE NO.: 4-NOP-019 | | |

5.0 INFREQUENT OPERATIONS

5.1 ICW / CCW 4A Basket Strainer Backwash

NOTE

- Basket Strainer differential pressures can be misleading as to which Basket Strainer is the most clogged, since a higher flowrate can also cause a higher DP. If a sudden rise in temperature is noted upon isolating a Basket Strainer, then this is an indication that the alternate Basket Strainer is most clogged.
- Technical Specifications 3.7.3 contains ICW OPERABILITY requirements.

1. IF any ICW components are OOS, THEN **OBTAIN** permission from the Shift Manager prior to proceeding with this procedure section.
2. IF in MODE 1, 2, 3, or 4, THEN **COMPLETE** an OLRM risk assessment per 0-ADM-225, On Line Risk Management.
3. **CHECK** that **NO** mode changes are planned for the duration of this CCW Strainer Backwashing Evolution.
4. **ENSURE** ICW/CCW 4B Basket Strainer is in service.
5. **ENSURE** at least one of the following ICW/TPCW flow requirements are met:
 - Total ICW flow through TPCW HXs is greater than 8000 gpm.
 - Two OPERABLE ICW Pumps, powered from independent power supplies, are aligned to the ICW Header and will remain in service during the backwash.
6. IF less than 3 CCW HXs are in service, THEN **ENSURE** an operator is in continuous communication with Control Room and available to immediately restore basket strainer to service when directed by the Control Room.

| | | |
|-----------------------------|---|--------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM | PAGE: 34 of 158 |
| PROCEDURE NO.: 4-NOP-019 | TURKEY POINT UNIT 4 | |

5.1 ICW / CCW 4A Basket Strainer Backwash (continued)

NOTE

The Minimum Required ICW/CCW Flowrate should be determined as follows:

- If three CCW HXs are in service, then the minimum required ICW flow rate is 11,000 gpm **TOTAL**, and at least 3500 gpm through each CCW HX.
- If less than three CCW HXs are in service, or flow through any HX is less than 3500 gpm, then the Minimum Required ICW/CCW Flowrate will be determined by the STA or Shift Manager per Attachment 5, Instructions for Determining Minimum Flow Using Flow Rate Curves or Manual Calculation.
- To decrease the Minimum Required ICW/CCW Flowrate, the CCW HX with highest tube resistance may be declared OOS at the discretion of the Shift Manager while the basket strainer is OOS. IF a CCW HX is declared OOS, THEN the ICW flow through that CCW HX can **NOT** be used to calculate the Minimum Required ICW/CCW Flowrate.

7. IF only two CCW HXs are in service, or flow through any CCW HX is less than 3500 gpm, THEN **NOTIFY** Shift Manager or STA to complete Attachment 5, Instructions for Determining Minimum Flow Using Flow Rate Curves or Manual Calculation, to determine the Minimum Required ICW/CCW Flowrate.
8. **RECORD** the Minimum Required ICW/CCW Flowrate on Attachment 7, Intake Cooling Water Minimum Flow Verification Data Sheet.
9. IF only two CCW HXs are in service and the Minimum Required ICW/CCW Flowrate can **NOT** be achieved, THEN:
 - A. **ISOLATE** ICW and CCW flows through the OOS CCW HX.
 - B. IF the Minimum Required ICW/CCW Flowrate still can **NOT** be achieved, THEN **THROTTLE** CLOSE 4-50-401, ICW FROM TPCW HXS, until the Minimum Required ICW/CCW Flowrate is achieved or Annunciator F 6/4 GEN RTD HI TEMP alarms.
10. **CHECK** ICW/CCW Flowrates are at least the Minimum Required per Attachment 7, Intake Cooling Water Minimum Flow Verification Data Sheet.

| | | |
|-----------------------------|--|------------------------|
| REVISION NO.: 25 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM TURKEY POINT UNIT 4 | PAGE: 35 of 158 |
| PROCEDURE NO.: 4-NOP-019 | | |

5.1 ICW / CCW 4A Basket Strainer Backwash (continued)

11. NOTIFY the RO of commencing 4A ICW/CCW Basket Strainer removal.

A. IF in MODE 1, 2, 3, or 4, **THEN NOTIFY** the RO of the resulting 72-hour Action Statement for one ICW header inoperable per T.S. 3.7.3.

CAUTION

While isolating a CCW/ICW Strainer, ICW flows below the "Minimum Required ICW/CCW Flowrate" are permitted for up to 5 minutes, without declaring ICW System inoperable. If flow is below the "Minimum Required ICW/CCW Flowrate" for greater than 5 minutes, then ICW System shall be declared inoperable at the time when flow initially went below the "Minimum Required ICW/CCW Flowrate."

12. INITIATE backwashing of 4A Basket Strainer:

- A. CLOSE** 4-50-327, ICW/CCW BASKET STRNR A DPI-1402 HP ROOT.
- B. CLOSE** 4-50-328, ICW/CCW BASKET STRNR A DPI-1402 LP ROOT.
- C. Slowly CLOSE** 4-50-329, OUTLET VLV TO BASKET STRAINER FOR CCW HX A.
- D. CLOSE** 4-50-324, ICW/CCW BASKET STRNR A INLET ISOL.
- E. OPEN** 4-50-325, ICW/CCW BASKET STRNR A BACKWASH ISOL.
- F. OPEN** 4-50-872, CCW BASKET STRAINER A BACKWASH LINE ISO VLV.
- G. OPEN** 4-50-873, CCW BASKET STRAINER A BACKWASH LINE ISO VLV.
- H. Slowly OPEN** 4-50-326, ICW/CCW BSKT STRNR A DRAIN.

| | | |
|-----------------------------|--|------------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM TURKEY POINT UNIT 4 | PAGE: 36 of 158 |
| PROCEDURE NO.: 4-NOP-019 | | <u>INITIAL</u> |

5.1 ICW / CCW 4A Basket Strainer Backwash (continued)

13. While backwashing 4A Basket Strainer, CHECK:

- A. ICW/CCW Flowrate is at least the Minimum Required per Attachment 7, Intake Cooling Water Minimum Flow Verification Data Sheet.
- B. ICW/TPCW Minimum flow requirements are met per one of the following:
 - Total ICW flow through TPCW HXs is greater than 8000 gpm.
 - Two OPERABLE ICW Pumps are powered from independent power supplies.

14. IF any of the following occur:

- ICW/CCW flowrates are below the Minimum Required.
- ICW/TPCW flowrates are below the Minimum Required.
- RO directs restoration of Basket Strainer to service.
- Basket Strainer has been backwashed for at least 5 minutes.

THEN **RESTORE** 4A Basket Strainer to service per the following:

- A. **CLOSE** 4-50-326, ICW/CCW BSKT STRNR A DRAIN.
- B. IF ICW Supplemental Cooling is **NOT** in service for Unit 4, THEN **CLOSE** 4-50-325, ICW/CCW BASKET STRNR A BACKWASH ISOL.
- C. **CLOSE** 4-50-872, CCW BASKET STRAINER A BACKWASH LINE ISO VLV.

IV

IV

IV

| | | |
|-----------------------------|--|------------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM TURKEY POINT UNIT 4 | PAGE: 37 of 158 |
| PROCEDURE NO.: 4-NOP-019 | | <u>INITIAL</u> |

5.1 ICW / CCW 4A Basket Strainer Backwash (continued)

14. (continued)

D. **CLOSE** 4-50-873, CCW BASKET STRAINER A BACKWASH LINE ISO VLV. _____

IV

E. **OPEN** 4-50-324, ICW/CCW BASKET STRNR A INLET ISOL. _____

IV

F. **OPEN** 4-50-329, OUTLET VLV TO BASKET STRAINER FOR CCW HX A. _____

IV

G. **OPEN** 4-50-327, ICW/CCW BASKET STRNR A DPI-1402 HP ROOT. _____

IV

H. **OPEN** 4-50-328, ICW/CCW BASKET STRNR A DPI-1402 LP ROOT. _____

IV

15. **NOTIFY** RO that 4A Basket Strainer is restored to service.

16. IF DPI-4-1402, CCW 4A BASKET STRAINER DP is greater than 1.0 psid, but less than 2.0 psid, THEN **PERFORM** Full Flow Backwash per Section 5.3.

17. IF DPI-4-1402, CCW 4A BASKET STRAINER DP is greater than 2.0 psid, THEN **REPEAT** ICW/CCW 4A Basket Strainer Backwash.

18. IF backwashing did **NOT** reduce Basket Strainer DP, THEN **EXPEDITE** the mechanical cleaning of ICW/CCW 4A Basket Strainer per Section 5.9. [Section 7.2, Commitment 1]

End of Section 5.1

| | | |
|-----------------------------|---|------------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM | PAGE: 38 of 158 |
| PROCEDURE NO.: 4-NOP-019 | TURKEY POINT UNIT 4 | |

5.2 ICW / CCW 4B Basket Strainer Backwash

NOTE

- Basket Strainer differential pressures can be misleading as to which Basket Strainer is the most clogged, since a higher flowrate can also cause a higher dP. If a sudden rise in temperature is noted upon isolating a Basket Strainer, then this is an indication that the alternate Basket Strainer is most clogged.
- Technical Specifications 3.7.3 contains ICW OPERABILITY requirements.

1. IF any ICW components are OOS, THEN **OBTAIN** permission from the Shift Manager prior to proceeding with this procedure section.
2. IF in MODE 1, 2, 3, or 4, THEN **COMPLETE** an OLRM risk assessment per 0-ADM-225, On Line Risk Management.
3. **CHECK** that **NO** mode changes are planned for the duration of this CCW Strainer Backwashing Evolution.
4. **ENSURE** ICW/CCW 4A basket strainer is in service.
5. **ENSURE** at least one of the following ICW/TPCW flow requirements are met:
 - Total ICW flow through TPCW HXs is greater than 8000 gpm.
 - Two OPERABLE ICW Pumps, powered from independent power supplies, are aligned to the ICW Header and will remain in service during the backwash.
6. IF less than 3 CCW HXs are in service, THEN **ENSURE** an operator is in continuous communication with Control Room and available to restore basket strainer to service if directed by the Control Room.

| | | |
|-----------------------------|---|------------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM | PAGE: 39 of 158 |
| PROCEDURE NO.: 4-NOP-019 | TURKEY POINT UNIT 4 | |

5.2 ICW / CCW 4B Basket Strainer Backwash (continued)

NOTE

The Minimum Required ICW/CCW Flowrate should be determined as follows:

- If three CCW HXs are in service, then the minimum required ICW flow rate is 11,000 gpm total, and at least 3500 gpm through each CCW HX.
- If less than three CCW HXs are in service, or flow through any HX is less than 3500 gpm, then the Minimum Required ICW/CCW Flowrate will be determined by the STA or Shift Manager per Attachment 5, Instructions for Determining Minimum Flow Using Flow Rate Curves or Manual Calculation.

To decrease the Minimum Required ICW/CCW Flowrate, the CCW HX with highest tube resistance may be declared OOS at the discretion of the Shift Manager while the basket strainer is OOS. If a CCW HX is declared OOS, THEN the ICW flow through that CCW HX can **NOT** be used to calculate the Minimum Required ICW/CCW Flowrate.

7. IF only two CCW HXs are in service, or flow through any CCW HX is less than 3500 gpm, THEN **NOTIFY** Shift Manager or STA to complete Attachment 5, Instructions for Determining Minimum Flow Using Flow Rate Curves or Manual Calculation, to determine the Minimum Required ICW/CCW Flowrate.
8. **RECORD** the Minimum Required ICW/CCW Flowrate on Attachment 7, Intake Cooling Water Minimum Flow Verification Data Sheet.
9. IF only two CCW HXs are in service and the Minimum Required ICW/CCW Flowrate can **NOT** be achieved, THEN:
 - A. **ISOLATE** ICW and CCW flows through the OOS CCW HX.
 - B. IF the Minimum Required ICW/CCW Flowrate still can **NOT** be achieved, THEN **THROTTLE** CLOSE 4-50-401, ICW FROM TPCW HXS, until the Minimum Required ICW/CCW Flowrate is achieved or Annunciator F 6/4 GEN RTD HI TEMP alarms.
10. **CHECK** ICW/CCW Flowrates are at least the Minimum Required per Attachment 7, Intake Cooling Water Minimum Flow Verification Data Sheet.

| | | |
|-----------------------------|--|------------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM TURKEY POINT UNIT 4 | PAGE: 40 of 158 |
| PROCEDURE NO.: 4-NOP-019 | | |

5.2 ICW / CCW 4B Basket Strainer Backwash (continued)

11. **NOTIFY** the RO of commencing 4B ICW/CCW Basket Strainer removal.

- A. IF in MODE 1, 2, 3, or 4, THEN **NOTIFY** the RO of the resulting 72-hour Action Statement for one ICW header inoperable per T.S. 3.7.3.

CAUTION

While isolating a CCW/ICW Strainer, ICW flows below the "Minimum Required ICW/CCW Flowrate" are permitted for up to 5 minutes, without declaring ICW System inoperable. If flow is below the "Minimum Required ICW/CCW Flowrate" for greater than 5 minutes, then ICW System shall be declared inoperable at the time when flow initially went below the "Minimum Required ICW/CCW Flowrate."

12. **INITIATE** backwashing of 4B Basket Strainer:

- A. **CLOSE** 4-50-347, ICW/CCW BASKET STRNR B DPI-1403 HP ROOT.
- B. **CLOSE** 4-50-348, ICW/CCW BASKET STRNR 4B DPI-1403 LP ROOT VLV.
- C. Slowly **CLOSE** 4-50-349, ICW/CCW BASKET STRNR B OUTLET ISOL.
- D. **CLOSE** 4-50-344, ICW/CCW BASKET STRNR B INLET ISOL.
- E. **OPEN** 4-50-345, ICW/CCW BASKET STRNR B BACKWASH ISOL.
- F. **OPEN** 4-50-874, CCW BASKET STRAINER B BACKWASH LINE ISO VLV.
- G. **OPEN** 4-50-875, CCW BASKET STRAINER B BACKWASH LINE ISO VLV.
- H. Slowly **OPEN** 4-50-346, ICW/CCW BASKET STRAINER B DRN.

| | | |
|-----------------------------|--|------------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM TURKEY POINT UNIT 4 | PAGE: 41 of 158 |
| PROCEDURE NO.: 4-NOP-019 | | <u>INITIAL</u> |

5.2 ICW / CCW 4B Basket Strainer Backwash (continued)

13. While backwashing 4B Basket Strainer, **CHECK**:

- A. ICW/CCW Flowrate is at least the Minimum Required per Attachment 7, Intake Cooling Water Minimum Flow Verification Data Sheet.
- B. ICW/TPCW Minimum flow requirements are met per one of the following:
 - Total ICW flow through TPCW HXs is greater than 8000 gpm.
 - Two OPERABLE ICW Pumps are powered from independent power supplies.

14. IF any of the following occur:

- ICW/CCW flowrates are below the Minimum required.
- ICW/TPCW flowrates are below the Minimum required.
- RO directs restoration of Basket Strainer.
- Basket Strainer has been backwashed for at least 5 minutes.

THEN **RESTORE** 4B Basket Strainer to service per the following:

- A. Slowly **CLOSE** 4-50-346, ICW/CCW BASKET STRAINER B DRN. _____
- B. IF ICW Supplemental Cooling System is **NOT** in service for Unit 4, THEN **CLOSE** 4-50-345, ICW/CCW BASKET STRNR B BACKWASH ISOL. _____
- C. **CLOSE** 4-50-874, CCW BASKET STRAINER B BACKWASH LINE ISO VLV. _____

IV

IV

IV

| | | |
|-----------------------------|---|--------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM | PAGE: 42 of 158 |
| PROCEDURE NO.: 4-NOP-019 | TURKEY POINT UNIT 4 | <u>INITIAL</u> |

5.2 ICW / CCW 4B Basket Strainer Backwash (continued)

14. (continued)

D. CLOSE 4-50-875, CCW BASKET STRAINER B BACKWASH LINE ISO VLV. _____
IV

E. OPEN 4-50-344, ICW/CCW BASKET STRNR B INLET ISOL. _____
IV

F. Slowly OPEN 4-50-349, ICW/CCW BASKET STRNR B OUTLET ISOL. _____
IV

G. OPEN 4-50-347, ICW/CCW BASKET STRNR B DPI-1403 HP ROOT. _____
IV

H. OPEN 4-50-348, ICW/CCW BASKET STRNR 4B DPI-1403 LP ROOT VLV. _____
IV

15. NOTIFY RO that the 4B Basket Strainer is restored to service.

16. IF DPI-4-1403, CCW 4B BASKET STRAINER DP is greater than 1.0 psid and less than 2.0 psid, THEN **PERFORM Full Flow Backwash per Section 5.4.**

| | | |
|-----------------------------|---|--------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM | PAGE: 43 of 158 |
| PROCEDURE NO.: 4-NOP-019 | TURKEY POINT UNIT 4 | |

5.2 ICW / CCW 4B Basket Strainer Backwash (continued)

17. IF DPI-4-1403, CCW 4B BASKET STRAINER DP is greater than 2.0 psid, THEN **REPEAT** ICW/CCW 4B Basket Strainer Backwash.

18. IF backwashing did **NOT** reduce Basket Strainer DP, THEN **EXPEDITE** the mechanical cleaning of ICW/CCW 4B Basket Strainer per Section 5.10. [Section 7.2, Commitment 1]

End of Section 5.2

ABB TIMC010 - CONT DOC - INFORMATION

Place cursor on indicators and More Detail to view additional data.

Facility= PTN **Status=** ACTIVE **12/28/2015**
Doc Type= PROC **Sub Type=** OP
Doc No.= 4-NOP-019 **Sheet** _____
Title INTAKE COOLING WATER SYSTEM **EDM Doc** ☒ **OLE** ☐
Execute

Controlled Document Details
Operational Service Doc ☐ **EC Required** ☐ **Security=** N/A **Update Pri=** _____
Doc Owner= C-OP **Review Cycle** _____ **Last Reviewed** _____
Review Organization _____ **Form Template** _____ **Authorizing EC** _____
Safety Class= SR **Vndr Doc=** _____ **Vendor Sheet** _____
Vndr/Mfr= _____ **CONT** ☐

[Revisions](#) [References](#) [Documents](#) [Notes](#) [Codes](#) [Attributes](#)
[Equipment](#) [Actn Regs](#) [Supersede](#) [Parts](#) [ECs](#)

Controlled Document Revisions

| Revision | Minor Revision | Status | Issue Date | Image |
|----------|----------------|---------|------------|-------|
| 025 | | ISSUED | 11/07/2017 | |
| 024 | A | REVISED | 09/25/2017 | |
| 024 | | REVISED | 06/27/2017 | |
| 023 | | REVISED | 02/16/2017 | |
| 022 | | REVISED | 02/15/2017 | |

Productions (ProdF)

PLANT SYSTEMS

3/4.7.3 INTAKE COOLING WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.3 The Intake Cooling Water System (ICW) shall be OPERABLE with:

- a. Three ICW pumps, and
- b. Two ICW headers.

APPLICABILITY: MODES 1, 2, 3, and 4.

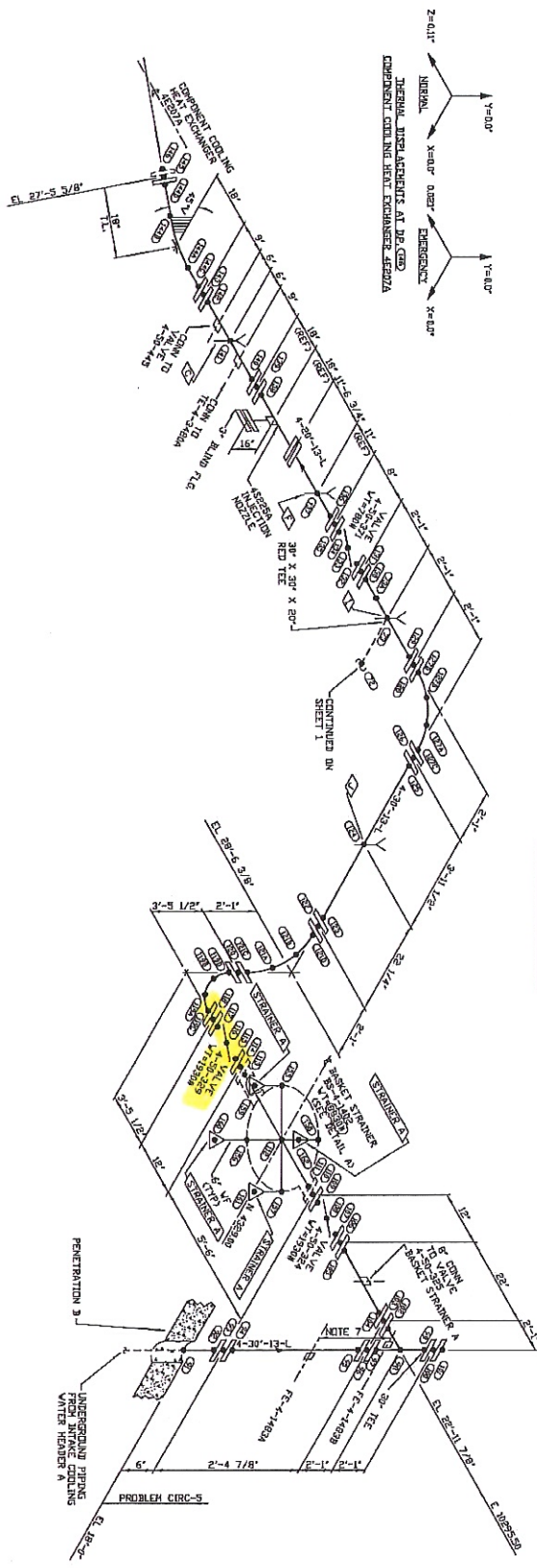
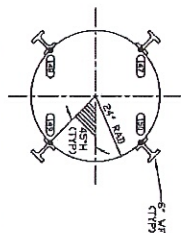
ACTION:

- a. With only two ICW pumps with independent power supplies OPERABLE, restore the inoperable ICW pump to OPERABLE status within 14 days or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. The provisions of Specification 3.0.4 are not applicable.
- b. With only one ICW pump OPERABLE or with two ICW pumps OPERABLE but not from independent power supplies, restore two pumps from independent power supplies to OPERABLE status within 72 hours or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- c. With only one ICW header OPERABLE, restore two headers to OPERABLE status within 72 hours or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.3 The Intake Cooling Water System (ICW) shall be demonstrated OPERABLE:

- a. In accordance with the Surveillance Frequency Control Program by verifying that each valve (manual, power-operated, or automatic) servicing safety-related equipment that is not locked, sealed, or otherwise secured in position is in its correct position; and
- b. In accordance with the Surveillance Frequency Control Program during shutdown, by verifying that:
 - 1) Each automatic valve servicing safety-related equipment actuates to its correct position on a SI test signal, and
 - 2) Each Intake Cooling Water System pump starts automatically on a SI test signal.
 - 3) Interlocks required for system operability are OPERABLE.



NOTES:

1) FOR GENERAL NOTES AND REFERENCE DRAWINGS SEE 5644-P-56-2-5 SH 1

2) ALL ISL INFORMATION, FIELD MEASUREMENTS, ZONES, LINE NUMBERS & WHP RESTAURANT LOCATIONS ARE FOR ISL REFERENCE ONLY.

| ZONE NUMBER | LINE NUMBER |
|-------------|-------------|
| 4-166 | 204-23-1 |
| 4-165 | 30-13-1 |

3) BOLLING-TUNES INSTALLED ON THE 6-INCH BACKWASH BRAIN VALVE (4-59-286) ARE 5/8" A-193 GR-B7 AND TORQUED TO 65 FT-LBS (4550).

| | | | | | | | | | | | | | | | | |
|---|---------|-----------------|---------------------------|--------|------------|------|----|------|---------|-----------------|--------------------------|--------|------------|------|----|------|
| 6 | 10/2/79 | ISSUED AS BUILT | FOR SET BACKS FROM 20-220 | RECORD | UNAPPROVED | DATE | BY | CHKD | 10/2/79 | ISSUED AS BUILT | FOR SETBACKS FROM 20-220 | RECORD | UNAPPROVED | DATE | BY | CHKD |
| 5 | 9/27/79 | ISSUED AS BUILT | FOR SET BACK FROM 20-220 | RECORD | UNAPPROVED | DATE | BY | CHKD | 9/27/79 | ISSUED AS BUILT | FOR SETBACKS FROM 20-220 | RECORD | UNAPPROVED | DATE | BY | CHKD |
| 4 | 9/27/79 | ISSUED AS BUILT | FOR SET BACK FROM 20-220 | RECORD | UNAPPROVED | DATE | BY | CHKD | 9/27/79 | ISSUED AS BUILT | FOR SETBACKS FROM 20-220 | RECORD | UNAPPROVED | DATE | BY | CHKD |
| 3 | 9/27/79 | ISSUED AS BUILT | FOR SET BACK FROM 20-220 | RECORD | UNAPPROVED | DATE | BY | CHKD | 9/27/79 | ISSUED AS BUILT | FOR SETBACKS FROM 20-220 | RECORD | UNAPPROVED | DATE | BY | CHKD |
| 2 | 9/27/79 | ISSUED AS BUILT | FOR SET BACK FROM 20-220 | RECORD | UNAPPROVED | DATE | BY | CHKD | 9/27/79 | ISSUED AS BUILT | FOR SETBACKS FROM 20-220 | RECORD | UNAPPROVED | DATE | BY | CHKD |
| 1 | 9/27/79 | ISSUED AS BUILT | FOR SET BACK FROM 20-220 | RECORD | UNAPPROVED | DATE | BY | CHKD | 9/27/79 | ISSUED AS BUILT | FOR SETBACKS FROM 20-220 | RECORD | UNAPPROVED | DATE | BY | CHKD |



SCALE 0

DATE

BY

CHKD

APPROVED

TURKEY POINT NUCLEAR POWER PLANT

UNIT 4

INTAKE COOLING WATER SYSTEM

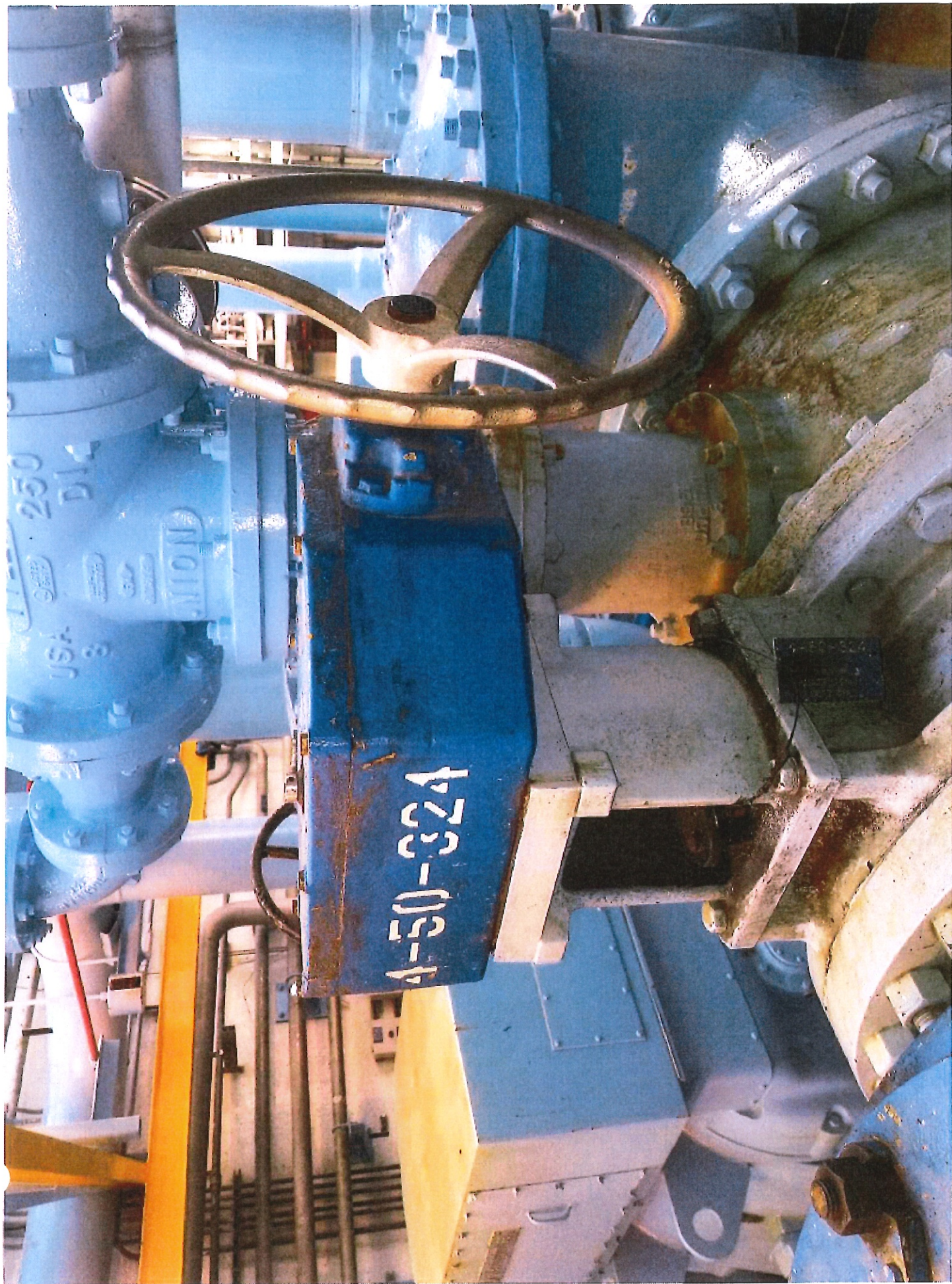
PIPING TO CCW HOT EXCH 42E2374

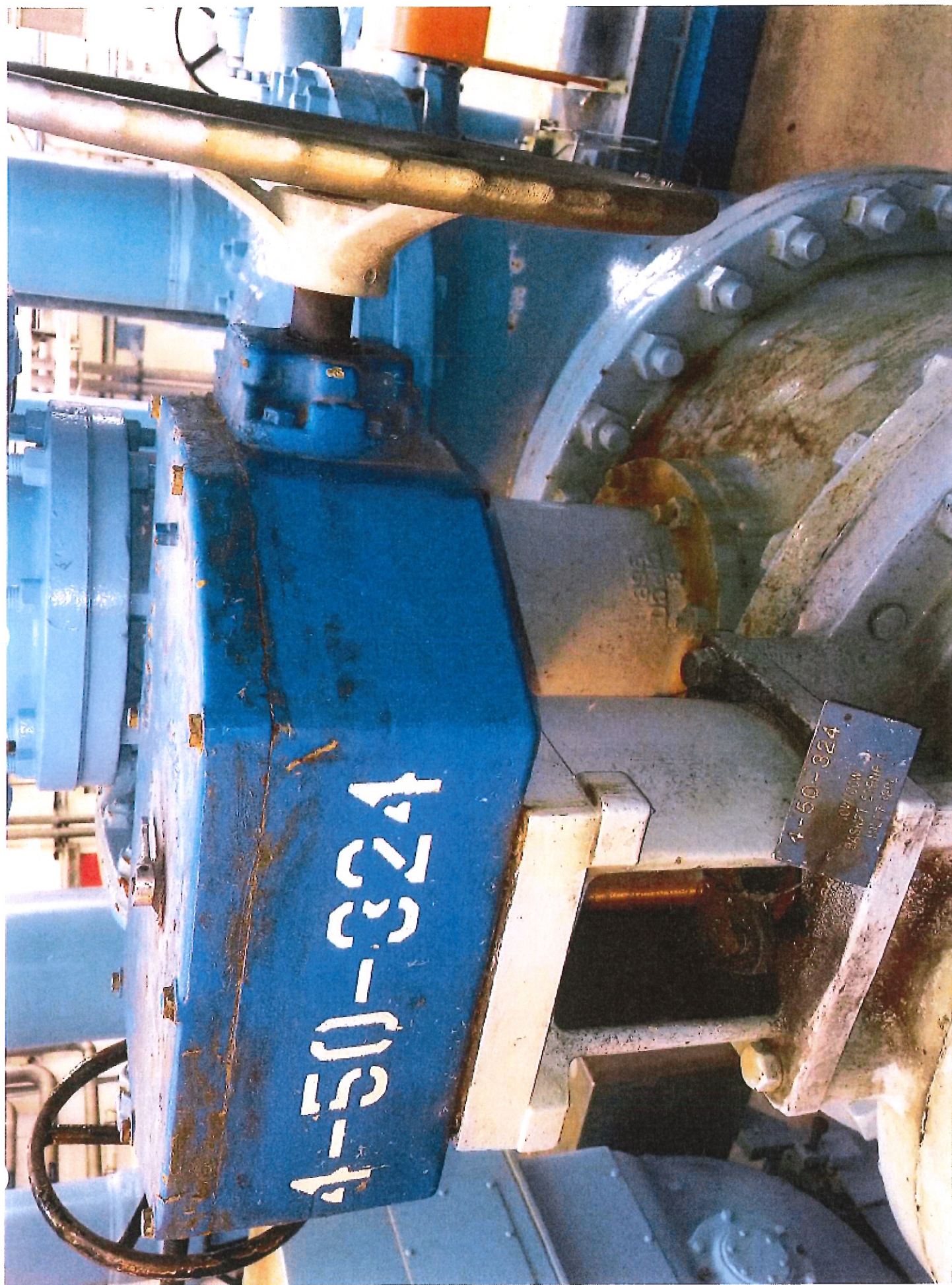
STRESS PROBLEM CIRC-5

TELETYPE ENGINEERING SERVICES

SHEET 2 OF 2

REV 6





3) Facility Position (Q89)

Attachment 3

Executive Summary of Challenged Questions and FPL Recommendation

Question 34:

This question is being challenged in accordance with NUREG 1021 REV 11, ES-403 for the following reason: “a question with an unclear stem that confused the applicants or did not provide all the necessary information”. Question 34 provides the operator with a Loss of CCW scenario in which one of the RCPs is experiencing High Motor Bearing temperatures. FPL recommends to accept both A and D distractors as correct for question 34 since two procedures that are applicable during the conditions described on the stem direct different actions, which are both applicable and correct.

Question 89:

This question is being challenged in accordance with NUREG 1021 REV 11, ES-403 for the following reason: “a question with an unclear stem that confused the applicants or did not provide all the necessary information”. Question 89 provides the operator with a scenario where one ICW/CCW strainer and one ICW/TPCW strainer are being backwashed simultaneously. Subsequent failures prevent restoration from backwashing operations. The question is to determine if a procedural limitation from 4-NOP-019, Intake Cooling Water System, has been violated and if the Unit Supervisor is required to apply TS 3.0.3. On question 89 it is unclear if an action statement was initially entered when the ICW/CCW backwash was started. Due to conflicting answers as a result of a missing piece of information FPL recommends to delete question 89 from the exam.

Question 94:

This question is being challenged in accordance with NUREG 1021 REV 11, ES-403 for the following reason: “a question with an unclear stem that confused the applicants or did not provide all the necessary information”. Question 94 is related knowledge of STA responsibilities. At Turkey Point, our plant administrative procedure 0-ADM-200, Operations Management Manual, is more restrictive than the Technical Specifications. This question did not specify which reference to use in order to formulate a response. Due to conflicting answers FPL recommends to delete question 94 from the exam.

Attachment 3

Applicant Comments on question 89:

Question 89 presented the applicants with a situation in which the ICW/CCW Basket Strainer was being backwashed at the same time as the ICW/TPCW Backwash Strainer. As stated in the stem of the question, during the subsequent restoration, 4-50-324, ICW/CCW BASKET STRAINER A INLET ISOLATION, experiences a sheared pin (handwheel spins freely) and remained closed, and POV-4-4883, ICW/TPCW HEADER B ISOLATION VALVE, failed closed and would not reopen. The question then asks the student if the limitations of strainer backwashing per 4-NOP-019 (ARE/ ARE NOT) violated; and if the Unit 4 Unit Supervisor (IS/IS NOT) required to be in HOT SHUTDOWN within the following 13 hours.

I chose answer (B) for the Limitations of 4-NOP-019 ARE violated, and the Unit Supervisor IS NOT required to be in HOT SHUTDOWN within 13 hours. The keyed answer was (D) in which the answer stated the Limitations of 4-NOP-019 ARE NOT violated, and Unit Supervisor IS NOT required to be in HOT SHUTDOWN within 13 hours.

Question 89 is not being contended for the second part of the question. I agree that Unit 4 is NOT in a Shutdown Action in accordance with Technical Specification 3.0.3. However, I am contending that the answer for the first part of Question 89 is incorrect.

The limitations of 4-NOP-019 pertaining to the Basket Strainers are found in section 2.2.3.3. Limitation 2.2.3.3 states as follows: "While isolating an ICW/CCW Strainer, ICW flows below "Minimum Required ICW/CCW Flowrate" are permitted for up to 5 minutes, without declaring ICW System inoperable. If flow is below the "Minimum Required ICW/CCW Flowrate" for greater than 5 minutes, then the ICW system shall be declared inoperable at the time when flow initially went below the "Minimum Required ICW/CCW Flowrate."

The Initial Conditions/Stem of the question state that valve 4-50-324 has a sheared pin and the valve remains closed. However, there is no definitive indication about time, which leaves the applicant to determine if the valve can be opened within 5 minutes to comply with Limitation 2.2.3.3. Indications show that the valve's pin has sheared (handwheel spins freely) and the valve remains closed. Valve 4-50-324 is a manual operating valve and has no other means to operate the valve in the open direction. See attached P&ID, isometric drawing, and picture of valve 4-50-324.

There is no reasonable assumption that the valve can be opened within 5 minutes to comply with the limitation provided in the procedure. Therefore, I came to the answer that the limitation to backwash for less than 5 minutes IS violated and thus answer (B) was chosen to reflect this condition. NUREG 1021-Revision 11 Section D.1 states that "newly discovered technical information that supports a change in the answer key" can be used as a reason to support taking two answers for this question or for the removal of this question.

Attachment 3

Facility Position on Applicant Comment on question 89: FPL concurs with the applicant's position on deletion of question 89.

Facility Comments on question 89:

This question is being challenged in accordance with NUREG 1021 REV 11, ES-403 for the following reason: "a question with an unclear stem that confused the applicants or did not provide all the necessary information". Question 89 provides the operator with a scenario where one ICW/CCW strainer and one ICW/TPCW strainer are being backwashed simultaneously. Subsequent failures prevent restoration from backwashing operations. The question is to determine if procedural limitations from 4-NOP-019, Intake Cooling Water System, have been violated and if the Unit Supervisor is required to apply TS 3.0.3. due to the failures.

- 4-NOP-019, Intake Cooling Water System, (Reference 3) allows for ICW/CCW Strainer backwashing without declaring the ICW header inoperable, during the backwash the ICW flowrate through the CCW lowers below the Minimum Required, this requires the affected ICW Header to be declared inoperable if this condition lasts longer than 5 minutes. On the other hand, at Turkey Point is normal practice to declare the affected ICW header inoperable preemptively before aligning for backwash. Since question 89 does not specify if an action statement was initially entered when the ICW/CCW backwash was started the candidates are required to make an assumption to answer this question, which could lead to two different answers: B or D.
- If assuming that Tech Spec 3.7.3 Action C (Reference 4) was entered before starting the strainer backwash, the candidate would conclude that no violation of the 4-NOP-019 limitations have occurred. In this case D distractor is the correct answer.

Attachment 3

- If assuming that Tech Spec 3.7.3 Action C was NOT entered before starting the strainer backwash, the candidate would conclude that a violation of the 4-NOP-019 limitations 2.2.3.3 have occurred due to lowering ICW flowrate through the ICW/CCW heat exchanger for longer than 5 minutes without declaring the affected ICW header inoperable. 4-NOP-019 allows for backwashing ICW/TPCW basket strainers for up to 5 minutes without declaring the associated ICW header inoperable. Under the assumption that a backwash is being attempted to be performed with both ICW headers operable and inside the 5 minute window, once the isolation valve (3-50-324) pin shears, the ICW/CCW basket strainer will remain isolated for greater than 5 minutes without declaring the affected ICW header inoperable. This constitutes a violation of 4-NOP-019 limitations 2.2.3.3. In this case B distractor is the correct answer.

3. While isolating a ICW/CCW Strainer, ICW flows below the Minimum Required ICW/CCW Flowrate are permitted for up to 5 minutes, without declaring ICW System INOPERABLE. If flow is below the Minimum Required ICW/CCW Flowrate for greater than 5 minutes, then the ICW System shall be declared INOPERABLE at the time when flow initially went below the Minimum Required ICW/CCW Flowrate.

FPL recommendation: As the candidates are required to assume that an ICW Header is declared inoperable or not at the beginning of the backwash, the candidates arrive at conflicting conclusions as it relates to the violation of the limitations of 4-NOP-019. Due to conflicting answers as a result of a missing piece of information FPL recommends to delete question 89 from the exam.

References:

3. 4-NOP-019, Intake Cooling Water System.
4. Tech Spec 3.7.3.

4) Supporting Documentation for Facility Position (Q89)

| | | | | |
|--|-----------------------|-----|--|--------|
| Examination Outline Cross-reference: | Level | RO | | SRO |
| | Tier # | | | 2 |
| | Group # | | | 1 |
| | Topic and K/A # | 076 | | 2.1.23 |
| | Importance Rating | | | 4.4 |
| Conduct of Operations: Ability to perform specific system and integrated plant procedures during all modes of plant operation. | | | | |
| Proposed Question: SRO Question # 89 | | | | |
| <p>Given the following conditions:</p> <ul style="list-style-type: none"> Unit 4 is operating at 100% power. Backwashing 4A ICW/CCW and 4B ICW/TPCW strainers, is in progress. <p>While restoring:</p> <ul style="list-style-type: none"> 4-50-324, ICW/CCW Basket Strainer A Inlet Isol, experiences a sheared pin (valve handwheel spins freely) and remains closed. POV-4-4883, ICW to TPCW Heat Exchangers Isolation Valve, is failed closed and will not re-open. <p>Which one of the following completes the statements below?</p> <p>4-NOP-019, Intake Cooling Water System, limitations for strainer backwashing <u>(1)</u> violated.</p> <p>Unit 4 US <u>(2)</u> required to be in at least HOT SHUTDOWN within the following 13 hours.</p> | | | | |
| A. | (1) are (2) is | | | |
| B. | (1) are (2) is NOT | | | |
| C. | (1) are NOT (2) is | | | |

| | | | |
|---|--|-------------------------------------|---------------------------------|
| D. | (1) are NOT (2) is NOT | | |
| Proposed Answer: D | | | |
| A. | Incorrect Both parts incorrect and plausible per discussion below. Both parts are plausible independently and taken as a whole. Part 2 incorrect; plausible because POV-4-4883 failure to re-open does not affect ICW tech specs, since the valve is in its prescribed accident position. | | |
| B. | Incorrect. Part 1 incorrect; plausible since 3-NOP-019 ensures that opposite train (of the same kind) strainer is in service before removing any strainer from service. | | |
| C. | Incorrect Part 2 incorrect; plausible since an ICW header is already OOS and POV-4-4883 failure would drive actions for TS 3.0.3. | | |
| D. | Correct IAW 4-ONOP-019 and TS 3.7.3/3.0.3 | | |
| Technical Reference(s) | 4-NOP-019 TS 3.7.3/ 3.0.3 | (Attach if not previously provided) | |
| Proposed Reference to be provided to applicants during examination: | | | N |
| Learning Objective: | 6902277 Objective 4 and 6 | (As available) | |
| Question Source: | Bank | PTN 2013 Audit | |
| | Modified Bank | X | (Note changes or attach parent) |
| | New | | |
| Question History: | Last NRC Exam: | | |

NRC L-17-1 EXAM SECURE INFORMATION

| | | |
|---|---------------------------------|---|
| Question Cognitive Level: | Memory or Fundamental Knowledge | |
| | Comprehension or Analysis | X |
| | | |
| 10 CFR Part 55 Content: | 55.41 | |
| | 55.43 | 2 |
| Facility operating limitations in the technical specifications and their bases. | | |
| | | |
| Comments: | | |
| | | |
| | | |

| | | |
|-----------------------------|--|-----------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM TURKEY POINT UNIT 4 | PAGE: 6 of 158 |
| PROCEDURE NO.: 4-NOP-019 | | |

2.2 Limitations

2.2.1 **General**

1. When in MODE 1, 2, 3, and 4, the ICW System shall be OPERABLE with three ICW pumps and two ICW headers.
2. When in MODE 1, 2, 3, and 4, and there are **NOT** two OPERABLE ICW pumps with independent power supplies, then a 72 hour LCO Action Statement is in effect to restore two pumps from independent power supplies to OPERABLE status.
3. When removing an ICW header from service in MODE 1, 2, 3, or 4, a 72 hour LCO Action Statement is in effect until header is returned to service. Because **NO** flow is being diverted away from the CCW HXs, as when a strainer is being backwashed, a continuous watch is **NOT** required to be posted when the header is out of service.
4. When the U5 Well Water Injection is in operation, the ICW System should **NOT** be operated with three ICW pumps. In this condition, the injection flow pushes the flow rate through the CCW HXs over their limit of 10,000 GPM. Momentary flow greater than 10,000 GPM is allowed.

2.2.2 **ICW Pumps**

1. ICW pumps should **NOT** be operated with water level of the Pump Well lower than 23 feet 2 inches below the centerline of the pump discharge which is 20 feet 8 inches below the Intake floor grating.
2. If ICW pump motor heaters are OOS for more than five days, then Engineering is required to determine pump OPERABILITY.
3. The minimum flow for any ICW pump during continuous operation should be greater than or equal to 3200 gpm.
4. Maximum ICW flowrate to each CCW HX during normal operation should NOT exceed 10,000 gpm per HX during normal three HX operations in order to minimize long term tube side erosion of the CCW HXs. (ref. 5610-019-DB-002)
 - A. The ICW maximum flowrate for each CCW HX may be increased to 12,850 gpm for a 72 hour period to accommodate HX or Basket Strainer cleanings. (ref. 4-NOP-030)
 - B. If flow exceeds 10,000 gpm for more than 72 hours, then a condition report shall be initiated.

| | | |
|-----------------------------|---|-------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM | PAGE: 7 of 158 |
| PROCEDURE NO.: 4-NOP-019 | TURKEY POINT UNIT 4 | |

2.2.2 ICW Pumps (continued)

4. (continued)

C. ICW flow should be throttled to maintain flow less than 10,000 gpm unless elevated flows are required (it is acceptable to run three ICW pumps with CCW HX flows greater than 10,000 gpm during periods of elevated canal temperature) ref. CR 1987062

5. Maximum ICW Pump flowrate is permitted up to 18,500 gpm. If an ICW Pump is operated in excess of 18,500 gpm, then flow should be reduced to less than 18,500 gpm as soon as possible. If an ICW pump has operated at flows greater than 18,500 gpm for more than twenty (20) minutes, then once pump flow has been reduced to 18,500 gpm or less, the IST Coordinator should be notified to perform vibration and pump DP testing per 4-OSP-019.1, Intake Cooling Water Pump Inservice Test to ensure integrity of the affected pump.

6. Concurrent operation of both the ICW and CW pumps in a single Intake Bay with a Stationary Screen installed is permitted only when determined necessary by Shift Manager or Unit Supervisor to accommodate pump shifting during emergent operating conditions. Such periods of operation shall be limited to as short a duration as possible, and an operator shall be stationed to continuously monitor the intake bay.

7. Operation of either the ICW or the CW pump in a single intake bay with a stationary screen installed is permitted when subject to the following restrictions:

A. Prior to placing the ICW pump in service, pump well water levels shall be verified greater than 20 feet 8 inches below the Intake floor grating.

B. Fouling of the stationary screen shall be monitored periodically to ensure that minimum required water levels are present. The frequency of the surveillance shall be determined by Shift Manager or Unit Supervisor based on current grass influx rate.

C. Any collected debris shall be removed from the stationary screen prior to reaching the minimum required water level.

D. If diving activities are being performed on the west side of the stationary screens, then the affected ICW and CW pumps shall be secured and declared out of service during the time the diver remains in the well.

| | | |
|-----------------------------|---|-------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM | PAGE: 8 of 158 |
| PROCEDURE NO.: 4-NOP-019 | TURKEY POINT UNIT 4 | |

2.2.2 ICW Pumps (continued)

7. (continued)

E. If diving activities are being performed on the east side of the stationary screens, the affected CW pumps shall be secured during the time the diver remains in the well. There are **NO** specific limitations on ICW pump usage when diving activities are performed on the east side of the stationary screens.

8. When starting ICW Pumps, the maximum flow rates for the in-service HXs may be exceeded. The high flow rate is acceptable provided the duration of high flow is minimized.

9. If time permits following the raking of an Intake Well, the respective Intake Well CW Pump should operate for at least 1 hour prior to starting the associated ICW Pump.

2.2.3 Basket Strainers

1. DP across the ICW Basket Strainers at the CCW HXs should **NOT** exceed 1.5 psid and at the TPCW HXs should **NOT** exceed 2.25 psid.

2. The maximum allowable ICW / CCW Basket Strainer element (screening) differential pressure is 10.0 psid per Section 7.1.2, Developmental Reference 6.P. Operation with differential pressures near or at 10.0 psid may challenge the structural integrity of the Basket Strainer element (screening).

3. While isolating an ICW/CCW Strainer, ICW flows below "Minimum Required ICW/CCW Flowrate" are permitted for up to 5 minutes, without declaring ICW System inoperable. If flow is below the "Minimum Required ICW/CCW Flowrate" for greater than 5 minutes, then the ICW System shall be declared inoperable at the time when flow initially went below the "Minimum Required ICW/CCW Flowrate."

| | | |
|-----------------------------|---|-------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM | PAGE: 9 of 158 |
| PROCEDURE NO.: 4-NOP-019 | TURKEY POINT UNIT 4 | |

2.2.4 CCW Heat Exchangers

1. ICW outlet temperature from CCW HXs should **NOT** exceed 120°F.
2. Maximum ICW flowrate to each CCW HX during normal operation should **NOT** exceed 10,000 gpm in order to minimize long term tube side erosion of the CCW HXs. The ICW flowrate for each CCW HX may be increased to 12,850 gpm for up to 72 hours period to accommodate HX or Basket Strainer cleanings.
3. Minimum ICW flowrate to CCW HXs during normal operation should be determined as follows:
 - If three CCW HXs are in service, then the minimum required ICW flow rate is 11,000 gpm TOTAL, and at least 3500 gpm through each CCW HX.
 - If less than three CCW HXs are in service, or flow through any HX is less than 3500 gpm, the Minimum Required ICW/CCW Flowrate will be determined by the STA or Shift Manager per Attachment 5, Instructions for Determining Minimum Flow Using Flow Rate Curves or Manual Calculation.
 - To decrease the Minimum Required ICW/CCW Flowrate, the CCW HX with highest tube resistance may be declared OOS at the discretion of the Shift Manager while the basket strainer is OOS. If a CCW HX is declared OOS, then the ICW flow through that CCW HX can **NOT** be used to calculate the Minimum Required ICW/CCW Flowrate.

2.2.5 TPCW Heat Exchangers

1. ICW outlet temperature from TPCW HXs should **NOT** exceed 105°F.
2. Maximum ICW flowrate to a TPCW HX during normal operation is 12,000 gpm.
3. Minimum ICW flowrate to each in service TPCW HX is 8000 gpm. If flowrate decreases to less than this value, then the System Engineer should be notified.
4. Attachment 8, Alternate Method to Determine ICW Flow Through the TPCW Heat Exchangers, may be used to determine ICW flow through a TPCW HX in the event the normal flow device is unavailable.

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

3/4.0 APPLICABILITY

LIMITING CONDITIONS FOR OPERATION

3.0.1 Compliance with the Limiting Conditions for Operation contained in the succeeding specifications is required during the OPERATIONAL MODES or other conditions specified therein; except that upon failure to meet the Limiting Conditions for Operation, the associated ACTION requirements shall be met, except as provided in Specification 3.0.6.

3.0.2 Noncompliance with a specification shall exist when the requirements of the Limiting Condition for Operation and associated ACTION requirements are not met within the specified time intervals, except as provided in Specification 3.0.6. If the Limiting Condition for Operation is restored prior to expiration of the specified time intervals, completion of the ACTION requirements is not required.

3.0.3 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within 1 hour action shall be initiated to place the unit, as applicable, in:

- a. At least HOT STANDBY within the next 6 hours,
- b. At least HOT SHUTDOWN within the following 6 hours, and
- c. At least COLD SHUTDOWN within the subsequent 24 hours.

Where corrective measures are completed that permit operation under the ACTION requirements, the action may be taken in accordance with the specified time limits as measured from the time of failure to meet the Limiting Condition for Operation. Exceptions to these requirements are stated in the individual specifications.

This specification is not applicable in MODES 5 or 6.

3.0.4 Entry into an OPERATIONAL MODE or other specified condition shall not be made when the conditions for the Limiting Conditions for Operation are not met and the associated ACTION requires a shutdown if they are not met within a specified time interval. Entry into an OPERATIONAL MODE or specified condition may be made in accordance with ACTION requirements when conformance to them permits continued operation of the facility for an unlimited period of time. This provision shall not prevent passage through or to OPERATIONAL MODES as required to comply with ACTION requirements. Exceptions to these requirements are stated in the individual specifications.

PLANT SYSTEMS

3/4.7.4 ULTIMATE HEAT SINK

LIMITING CONDITION FOR OPERATION

3.7.4 The ultimate heat sink shall be OPERABLE with an average supply water temperature less than or equal to 104°F.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With the requirements of the above specification not satisfied, be in at least HOT STANDBY within 12 hours and in COLD SHUTDOWN within the following 30 hours. This ACTION shall be applicable to both units simultaneously.

SURVEILLANCE REQUIREMENTS

4.7.4 The ultimate heat sink shall be determined OPERABLE:

- a. In accordance with the Surveillance Frequency Control Program by verifying the average supply water temperature* is less than or equal to 104°F.
- b. At least once per hour by verifying the average supply water temperature* is less than or equal to 104°F, when water temperature exceeds 100°F.

*Portable monitors may be used to measure the temperature.

Given the following conditions:

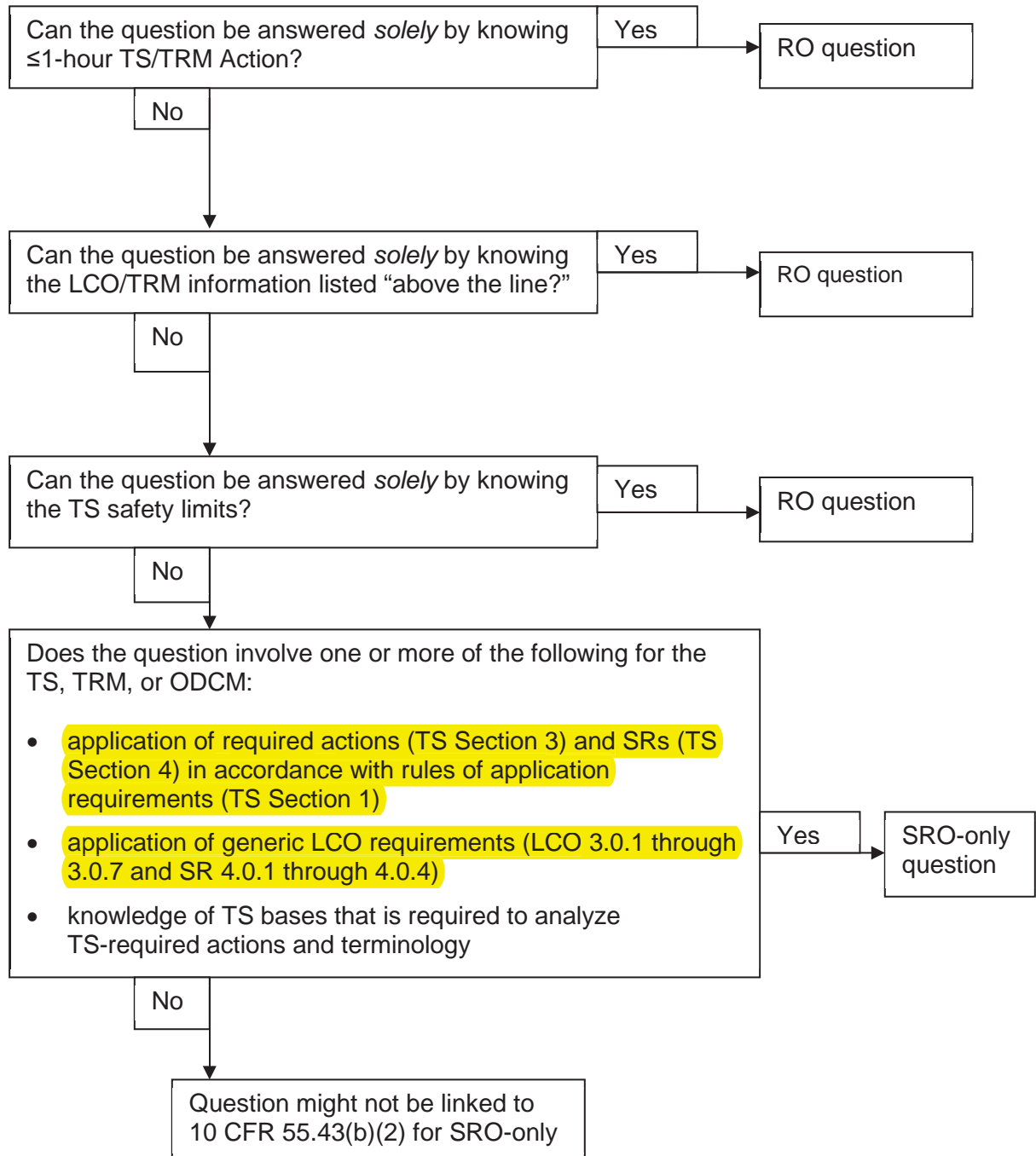
- Unit 4 is operating at 25% power.
- TPCW/ICW Isolation Valves, POV-4-4882 and 4883 have failed CLOSED.
- The crew has entered 4-ONOP-019, Intake Cooling Malfunction.
- POV-4-4882 has been opened manually using the local handwheel.
- POV-4-4883 will NOT open.

Which one of the following identifies the status of TPCW cooling, and identifies the technical specification implications of this event, if any?

| | |
|----|---|
| A. | TPCW Cooling has been restored; Declare the 4A ICW header inoperable ONLY, enter the action statement for LCO 3.7.3, Intake Cooling Water System, and restore the inoperable header within 72 hours. |
| B. | TPCW Cooling has been restored; Declare the 4A ICW header AND 4A train of Safety Injection Automatic Actuation Logic inoperable and enter action for LCO 3.3.2, Engineered Safety Feature Actuation System, and restore the inoperable train within 12 hours. |
| C. | TPCW Cooling has NOT been restored; Declare the 4A ICW header AND 4A train of Safety Injection Automatic Actuation Logic inoperable and enter action for LCO 3.3.2, Engineered Safety Feature Actuation System, and restore the inoperable train within 12 hours. |
| D | TPCW Cooling has NOT been restored; Declare the 4A ICW header inoperable, enter the action statement for LCO 3.7.3, Intake Cooling Water System, and restore the inoperable header within 72 hours. |

Proposed Answer: A

**Figure 2-1 Screening for SRO-Only Linked to 10 CFR 55.43(b)(2)
(Technical Specifications)**



| | | |
|-----------------------------|---|-----------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM | PAGE: 8 of 158 |
| PROCEDURE NO.: 4-NOP-019 | TURKEY POINT UNIT 4 | |

2.2.2 ICW Pumps (continued)

7. (continued)

- E. If diving activities are being performed on the east side of the stationary screens, the affected CW pumps shall be secured during the time the diver remains in the well. There are **NO** specific limitations on ICW pump usage when diving activities are performed on the east side of the stationary screens.
- 8. When starting ICW Pumps, the maximum flow rates for the in-service HXs may be exceeded. The high flow rate is acceptable provided the duration of high flow is minimized.
- 9. If time permits following the raking of an Intake Well, the respective Intake Well CW Pump should operate for at least 1 hour prior to starting the associated ICW Pump.

2.2.3 Basket Strainers

- 1. DP across the ICW Basket Strainers at the CCW HXs should **NOT** exceed 1.5 psid and at the TPCW HXs should **NOT** exceed 2.25 psid.
- 2. The maximum allowable ICW / CCW Basket Strainer element (screening) differential pressure is 10.0 psid per Section 7.1.2, Developmental Reference 6.P. Operation with differential pressures near or at 10.0 psid may challenge the structural integrity of the Basket Strainer element (screening).
- 3. While isolating an ICW/CCW Strainer, ICW flows below "Minimum Required ICW/CCW Flowrate" are permitted for up to 5 minutes, without declaring ICW System inoperable. If flow is below the "Minimum Required ICW/CCW Flowrate" for greater than 5 minutes, then the ICW System shall be declared inoperable at the time when flow initially went below the "Minimum Required ICW/CCW Flowrate."

| | | |
|-----------------------------|---|--------------------|
| REVISION NO.: 25 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM | PAGE: 35 of 158 |
| PROCEDURE NO.: 4-NOP-019 | TURKEY POINT UNIT 4 | |

5.1 ICW / CCW 4A Basket Strainer Backwash (continued)

11. NOTIFY the RO of commencing 4A ICW/CCW Basket Strainer removal.

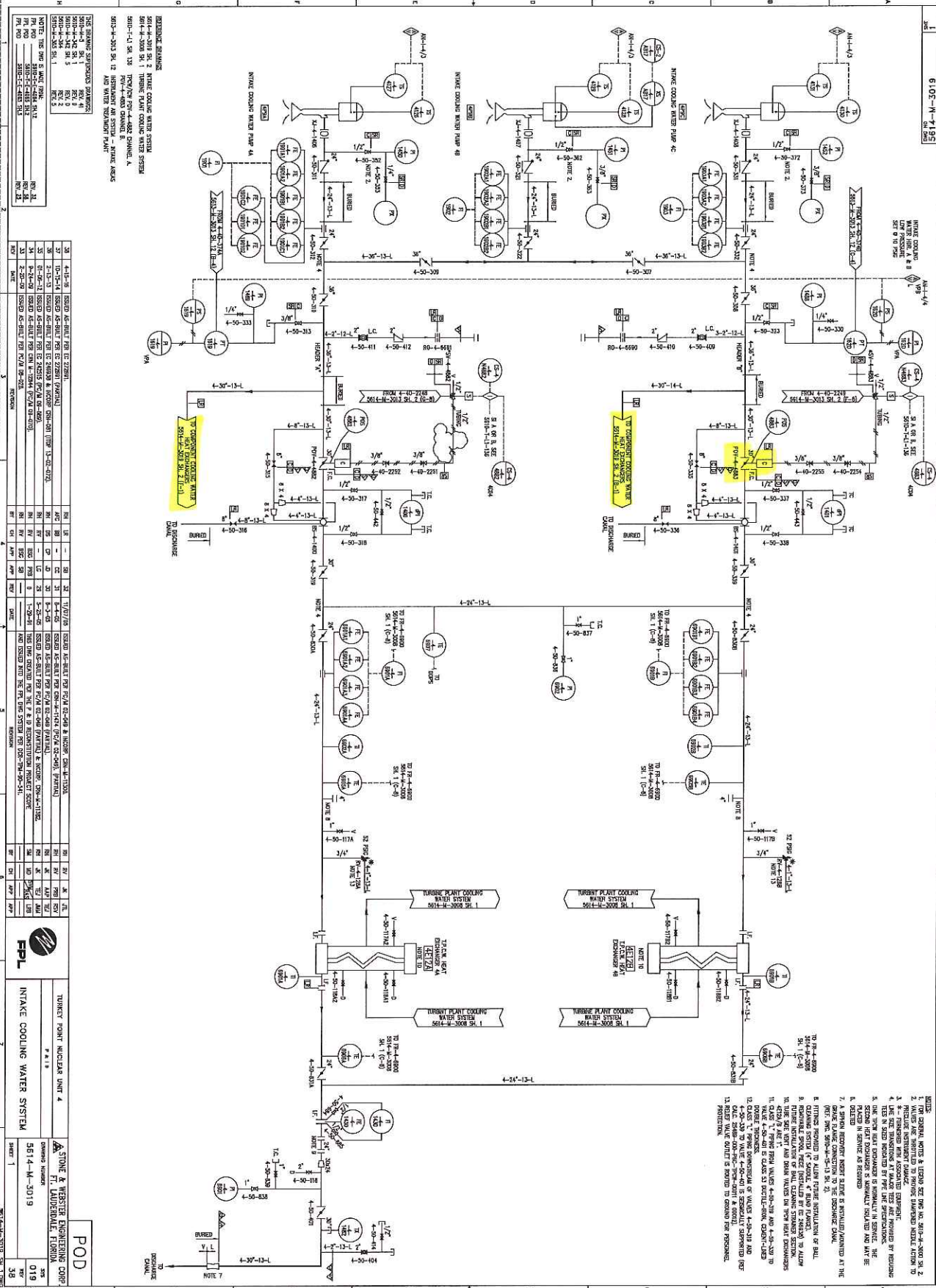
A. IF in MODE 1, 2, 3, or 4, **THEN NOTIFY** the RO of the resulting 72-hour Action Statement for one ICW header inoperable per T.S. 3.7.3.

CAUTION

While isolating a CCW/ICW Strainer, ICW flows below the "Minimum Required ICW/CCW Flowrate" are permitted for up to 5 minutes, without declaring ICW System inoperable. If flow is below the "Minimum Required ICW/CCW Flowrate" for greater than 5 minutes, then ICW System shall be declared inoperable at the time when flow initially went below the "Minimum Required ICW/CCW Flowrate."


12. INITIATE backwashing of 4A Basket Strainer:

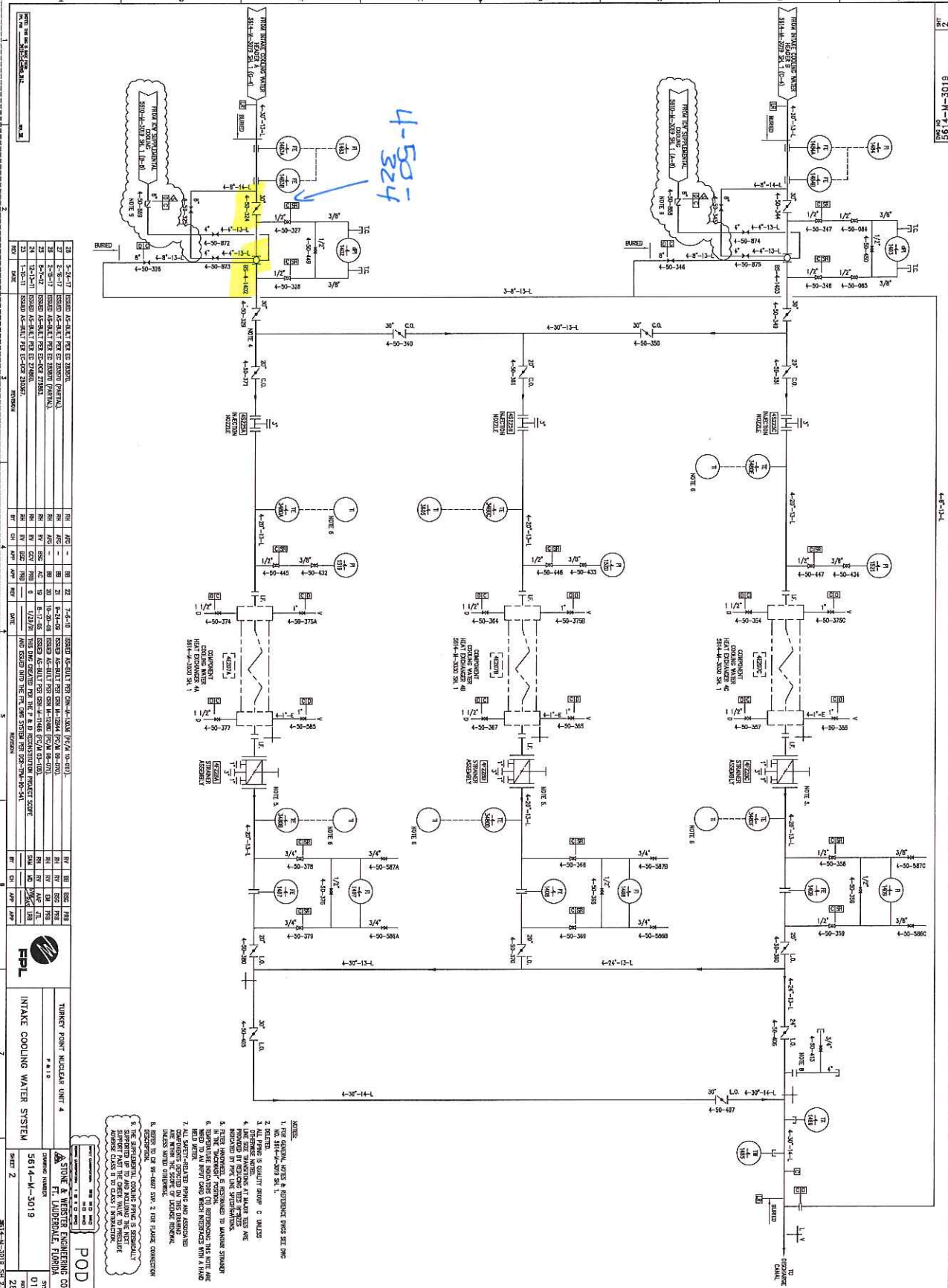
- A. CLOSE** 4-50-327, ICW/CCW BASKET STRNR A DPI-1402 HP ROOT.
- B. CLOSE** 4-50-328, ICW/CCW BASKET STRNR A DPI-1402 LP ROOT.
- C. Slowly CLOSE** 4-50-329, OUTLET VLV TO BASKET STRAINER FOR CCW HX A.
- D. CLOSE** 4-50-324, ICW/CCW BASKET STRNR A INLET ISOL.
- E. OPEN** 4-50-325, ICW/CCW BASKET STRNR A BACKWASH ISOL.
- F. OPEN** 4-50-872, CCW BASKET STRAINER A BACKWASH LINE ISO VLV.
- G. OPEN** 4-50-873, CCW BASKET STRAINER A BACKWASH LINE ISO VLV.
- H. Slowly OPEN** 4-50-326, ICW/CCW BSKT STRNR A DRAIN.



| | |
|-------------------------------|----------|
| NOTE: THIS DING IS JAWO FROM: | |
| PR: P00 | REV: 32 |
| PR: P01 | REV: 33 |
| PR: P02 | REV: 34 |
| PR: P03 | REV: 35 |
| PR: P04 | REV: 36 |
| PR: P05 | REV: 37 |
| PR: P06 | REV: 38 |
| PR: P07 | REV: 39 |
| PR: P08 | REV: 40 |
| PR: P09 | REV: 41 |
| PR: P10 | REV: 42 |
| PR: P11 | REV: 43 |
| PR: P12 | REV: 44 |
| PR: P13 | REV: 45 |
| PR: P14 | REV: 46 |
| PR: P15 | REV: 47 |
| PR: P16 | REV: 48 |
| PR: P17 | REV: 49 |
| PR: P18 | REV: 50 |
| PR: P19 | REV: 51 |
| PR: P20 | REV: 52 |
| PR: P21 | REV: 53 |
| PR: P22 | REV: 54 |
| PR: P23 | REV: 55 |
| PR: P24 | REV: 56 |
| PR: P25 | REV: 57 |
| PR: P26 | REV: 58 |
| PR: P27 | REV: 59 |
| PR: P28 | REV: 60 |
| PR: P29 | REV: 61 |
| PR: P30 | REV: 62 |
| PR: P31 | REV: 63 |
| PR: P32 | REV: 64 |
| PR: P33 | REV: 65 |
| PR: P34 | REV: 66 |
| PR: P35 | REV: 67 |
| PR: P36 | REV: 68 |
| PR: P37 | REV: 69 |
| PR: P38 | REV: 70 |
| PR: P39 | REV: 71 |
| PR: P40 | REV: 72 |
| PR: P41 | REV: 73 |
| PR: P42 | REV: 74 |
| PR: P43 | REV: 75 |
| PR: P44 | REV: 76 |
| PR: P45 | REV: 77 |
| PR: P46 | REV: 78 |
| PR: P47 | REV: 79 |
| PR: P48 | REV: 80 |
| PR: P49 | REV: 81 |
| PR: P50 | REV: 82 |
| PR: P51 | REV: 83 |
| PR: P52 | REV: 84 |
| PR: P53 | REV: 85 |
| PR: P54 | REV: 86 |
| PR: P55 | REV: 87 |
| PR: P56 | REV: 88 |
| PR: P57 | REV: 89 |
| PR: P58 | REV: 90 |
| PR: P59 | REV: 91 |
| PR: P60 | REV: 92 |
| PR: P61 | REV: 93 |
| PR: P62 | REV: 94 |
| PR: P63 | REV: 95 |
| PR: P64 | REV: 96 |
| PR: P65 | REV: 97 |
| PR: P66 | REV: 98 |
| PR: P67 | REV: 99 |
| PR: P68 | REV: 100 |
| PR: P69 | REV: 101 |
| PR: P70 | REV: 102 |
| PR: P71 | REV: 103 |
| PR: P72 | REV: 104 |
| PR: P73 | REV: 105 |
| PR: P74 | REV: 106 |
| PR: P75 | REV: 107 |
| PR: P76 | REV: 108 |
| PR: P77 | REV: 109 |
| PR: P78 | REV: 110 |
| PR: P79 | REV: 111 |
| PR: P80 | REV: 112 |
| PR: P81 | REV: 113 |
| PR: P82 | REV: 114 |
| PR: P83 | REV: 115 |
| PR: P84 | REV: 116 |
| PR: P85 | REV: 117 |
| PR: P86 | REV: 118 |
| PR: P87 | REV: 119 |
| PR: P88 | REV: 120 |
| PR: P89 | REV: 121 |
| PR: P90 | REV: 122 |
| PR: P91 | REV: 123 |
| PR: P92 | REV: 124 |
| PR: P93 | REV: 125 |
| PR: P94 | REV: 126 |
| PR: P95 | REV: 127 |
| PR: P96 | REV: 128 |
| PR: P97 | REV: 129 |
| PR: P98 | REV: 130 |
| PR: P99 | REV: 131 |
| PR: P100 | REV: 132 |
| PR: P101 | REV: 133 |
| PR: P102 | REV: 134 |
| PR: P103 | REV: 135 |
| PR: P104 | REV: 136 |
| PR: P105 | REV: 137 |
| PR: P106 | REV: 138 |
| PR: P107 | REV: 139 |
| PR: P108 | REV: 140 |
| PR: P109 | REV: 141 |
| PR: P110 | REV: 142 |
| PR: P111 | REV: 143 |
| PR: P112 | REV: 144 |
| PR: P113 | REV: 145 |
| PR: P114 | REV: 146 |
| PR: P115 | REV: 147 |
| PR: P116 | REV: 148 |
| PR: P117 | REV: 149 |
| PR: P118 | REV: 150 |
| PR: P119 | REV: 151 |
| PR: P120 | REV: 152 |
| PR: P121 | REV: 153 |
| PR: P122 | REV: 154 |
| PR: P123 | REV: 155 |
| PR: P124 | REV: 156 |
| PR: P125 | REV: 157 |
| PR: P126 | REV: 158 |
| PR: P127 | REV: 159 |
| PR: P128 | REV: 160 |
| PR: P129 | REV: 161 |
| PR: P130 | REV: 162 |
| PR: P131 | REV: 163 |
| PR: P132 | REV: 164 |
| PR: P133 | REV: 165 |
| PR: P134 | REV: 166 |
| PR: P135 | REV: 167 |
| PR: P136 | REV: 168 |
| PR: P137 | REV: 169 |
| PR: P138 | REV: 170 |
| PR: P139 | REV: 171 |
| PR: P140 | REV: 172 |
| PR: P141 | REV: 173 |
| PR: P142 | REV: 174 |
| PR: P143 | REV: 175 |
| PR: P144 | REV: 176 |
| PR: P145 | REV: 177 |
| PR: P146 | REV: 178 |
| PR: P147 | REV: 179 |
| PR: P148 | REV: 180 |
| PR: P149 | REV: 181 |
| PR: P150 | REV: 182 |
| PR: P151 | REV: 183 |
| PR: P152 | REV: 184 |
| PR: P153 | REV: 185 |
| PR: P154 | REV: 186 |
| PR: P155 | REV: 187 |
| PR: P156 | REV: 188 |
| PR: P157 | REV: 189 |
| PR: P158 | REV: 190 |
| PR: P159 | REV: 191 |
| PR: P160 | REV: 192 |
| PR: P161 | REV: 193 |
| PR: P162 | REV: 194 |
| PR: P163 | REV: 195 |
| PR: P164 | REV: 196 |
| PR: P165 | REV: 197 |
| PR: P166 | REV: 198 |
| PR: P167 | REV: 199 |
| PR: P168 | REV: 200 |
| PR: P169 | REV: 201 |
| PR: P170 | REV: 202 |
| PR: P171 | REV: 203 |
| PR: P172 | REV: 204 |
| PR: P173 | REV: 205 |
| PR: P174 | REV: 206 |
| PR: P175 | REV: 207 |
| PR: P176 | REV: 208 |
| PR: P177 | REV: 209 |
| PR: P178 | REV: 210 |
| PR: P179 | REV: 211 |
| PR: P180 | REV: 212 |
| PR: P181 | REV: 213 |
| PR: P182 | REV: 214 |
| PR: P183 | REV: 215 |
| PR: P184 | REV: 216 |
| PR: P185 | REV: 217 |
| PR: P186 | REV: 218 |
| PR: P187 | REV: 219 |
| PR: P188 | REV: 220 |
| PR: P189 | REV: 221 |
| PR: P190 | REV: 222 |
| PR: P191 | REV: 223 |
| PR: P192 | REV: 224 |
| PR: P193 | REV: 225 |
| PR: P194 | REV: 226 |
| PR: P195 | REV: 227 |
| PR: P196 | REV: 228 |
| PR: P197 | REV: 229 |
| PR: P198 | REV: 230 |
| PR: P199 | REV: 231 |
| PR: P200 | REV: 232 |
| PR: P201 | REV: 233 |
| PR: P202 | REV: 234 |
| PR: P203 | REV: 235 |
| PR: P204 | REV: 236 |
| PR: P205 | REV: 237 |
| PR: P206 | REV: 238 |
| PR: P207 | REV: 239 |
| PR: P208 | REV: 240 |
| PR: P209 | REV: 241 |
| PR: P210 | REV: 242 |
| PR: P211 | REV: 243 |
| PR: P212 | REV: 244 |
| PR: P213 | REV: 245 |
| PR: P214 | REV: 246 |
| PR: P215 | REV: 247 |
| PR: P216 | REV: 248 |
| PR: P217 | REV: 249 |
| PR: P218 | REV: 250 |
| PR: P219 | REV: 251 |
| PR: P220 | REV: 252 |
| PR: P221 | REV: 253 |
| PR: P222 | REV: 254 |
| PR: P223 | REV: 255 |
| PR: P224 | REV: 256 |
| PR: P225 | REV: 257 |
| PR: P226 | REV: 258 |
| PR: P227 | REV: 259 |
| PR: P228 | REV: 260 |
| PR: P229 | REV: 261 |
| PR: P230 | REV: 262 |
| PR: P231 | REV: 263 |
| PR: P232 | REV: 264 |
| PR: P233 | REV: 265 |
| PR: P234 | REV: 266 |
| PR: P235 | REV: 267 |
| PR: P236 | REV: 268 |
| PR: P237 | REV: 269 |
| PR: P238 | REV: 270 |
| PR: P239 | REV: 271 |
| PR: P240 | REV: 272 |
| PR: P241 | REV: 273 |
| PR: P242 | REV: 274 |
| PR: P243 | REV: 275 |
| PR: P244 | REV: 276 |
| PR: P245 | REV: 277 |
| PR: P246 | REV: 278 |
| PR: P247 | REV: 279 |
| PR: P248 | REV: 280 |
| PR: P249 | REV: 281 |
| PR: P250 | REV: 282 |
| PR: P251 | REV: 283 |
| PR: P252 | REV: 284 |
| PR: P253 | REV: 285 |
| PR: P254 | REV: 286 |
| PR: P255 | REV: 287 |
| PR: P256 | REV: 288 |
| PR: P257 | REV: 289 |
| PR: P258 | REV: 290 |
| PR: P259 | REV: 291 |
| PR: P260 | REV: 292 |
| PR: P261 | REV: 293 |
| PR: P262 | REV: 294 |
| PR: P263 | REV: 295 |
| PR: P264 | REV: 296 |
| PR: P265 | REV: 297 |
| PR: P266 | REV: 298 |
| PR: P267 | REV: 299 |
| PR: P268 | REV: 300 |
| PR: P269 | REV: 301 |
| PR: P270 | REV: 302 |
| PR: P271 | REV: 303 |
| PR: P272 | REV: 304 |
| PR: P273 | REV: 305 |
| PR: P274 | REV: 306 |
| PR: P275 | REV: 307 |
| PR: P276 | REV: 308 |
| PR: P277 | REV: 309 |
| PR: P278 | REV: 310 |
| PR: P279 | REV: 311 |
| PR: P280 | REV: 312 |
| PR: P281 | REV: 313 |
| PR: P282 | REV: 314 |
| PR: P283 | REV: 315 |
| PR: P284 | REV: 316 |
| PR: P285 | REV: 317 |
| PR: P286 | REV: 318 |
| PR: P287 | REV: 319 |
| PR: P288 | REV: 320 |
| PR: P289 | REV: 321 |
| PR: P290 | REV: 322 |
| PR: P291 | REV: 323 |
| PR: P292 | REV: 324 |
| PR: P293 | REV: 325 |
| PR: P294 | REV: 326 |
| PR: P295 | REV: 327 |
| PR: P296 | REV: 328 |
| PR: P297 | REV: 329 |
| PR: P298 | REV: 330 |
| PR: P299 | REV: 331 |
| PR: P300 | REV: 332 |
| PR: P301 | REV: 333 |
| PR: P302 | REV: 334 |
| PR: P303 | REV: 335 |
| PR: P304 | REV: 336 |
| PR: P305 | REV: 337 |
| PR: P306 | REV: 338 |
| PR: P307 | REV: 339 |
| PR: P308 | REV: 340 |
| PR: P309 | REV: 341 |
| PR: P310 | REV: 342 |
| PR: P311 | REV: 343 |
| PR: P312 | REV: 344 |
| PR: P313 | REV: 345 |
| PR: P314 | REV: 346 |
| PR: P315 | REV: 347 |
| PR: P316 | REV: 348 |
| PR: P317 | REV: 349 |
| PR: P318 | REV: 350 |
| PR: P319 | REV: 351 |
| PR: P320 | REV: 352 |
| PR: P321 | REV: 353 |
| PR: P322 | REV: 354 |
| PR: P323 | REV: 355 |
| PR: P324 | REV: 356 |
| PR: P325 | REV: 357 |
| PR: P326 | REV: 358 |
| PR: P327 | REV: 359 |
| PR: P328 | REV: 360 |
| PR: P329 | REV: 361 |
| PR: P330 | REV: 362 |
| PR: P331 | REV: 363 |
| PR: P332 | REV: 364 |
| PR: P333 | REV: 365 |
| PR: P334 | REV: 366 |
| PR: P335 | REV: 367 |
| PR: P336 | REV: 368 |
| PR: P337 | REV: 369 |
| PR: P338 | REV: 370 |
| PR: P339 | REV: 371 |
| PR: P340 | REV: 372 |
| PR: P341 | REV: 373 |
| PR: P342 | REV: 374 |
| PR: P343 | REV: 375 |
| PR: P344 | REV: 376 |
| PR: P345 | REV: 377 |
| PR: P346 | REV: 378 |
| PR: P347 | REV: 379 |
| PR: P348 | REV: 380 |
| PR: P349 | REV: 381 |
| PR: P350 | REV: 382 |
| PR: P351 | REV: 383 |
| PR: P352 | REV: 384 |
| PR: P353 | REV: 385 |
| PR: P354 | REV: 386 |
| PR: P355 | REV: 387 |
| PR: P356 | REV: 388 |
| PR: P357 | REV: 389 |
| PR: P358 | REV: 390 |
| PR: P359 | REV: 391 |
| PR: P360 | REV: 392 |
| PR: P361 | REV: 393 |
| PR: P362 | REV: 394 |
| PR: P363 | REV: 395 |
| PR: P364 | REV: 396 |
| PR: P365 | REV: 397 |
| PR: P366 | REV: 398 |
| PR: P367 | REV: 399 |
| PR: P368 | REV: 400 |
| PR: P369 | REV: 401 |
| PR: P370 | REV: 402 |
| PR: P371 | REV: 403 |
| PR: P372 | REV: 404 |
| PR: P373 | REV: 405 |
| PR: P374 | REV: 406 |
| PR: P375 | REV: 407 |
| PR: P376 | REV: 408 |
| PR: P377 | REV: 409 |
| PR: P378 | REV: 410 |
| PR: P379 | REV: 411 |
| PR: P380 | REV: 412 |
| PR: P381 | REV: 413 |
| PR: P382 | REV: 414 |
| PR: P383 | REV: 415 |
| PR: P384 | REV: 416 |
| PR: P385 | REV: 417 |
| PR: P386 | REV: 418 |
| PR: P387 | REV: 419 |
| PR: P388 | REV: 420 |
| PR: P389 | REV: 421 |
| PR: P390 | REV: 422 |
| PR: P391 | REV: 423 |
| PR: P392 | REV: 424 |
| PR: P393 | REV: 425 |
| PR: P394 | REV: 426 |
| PR: P395 | REV: 427 |
| PR: P396 | REV: 428 |
| PR: P397 | REV: 429 |
| PR: P398 | REV: 430 |
| PR: P399 | REV: 431 |
| PR: P400 | REV: 432 |
| PR: P401 | REV: 433 |
| PR: P402 | REV: 434 |
| PR: P403 | REV: 435 |
| PR: P404 | REV: 436 |
| PR: P405 | REV: 437 |
| PR: P406 | REV: 438 |
| PR: P407 | REV: 439 |
| PR: P408 | REV: 440 |
| PR: P409 | REV: 441 |
| PR: P410 | REV: 442 |
| PR: P411 | REV: 443 |
| PR: P412 | REV: 444 |
| PR: P413 | REV: 445 |
| PR: P414 | REV: 446 |
| PR: P415 | REV: 447 |
| PR: P416 | REV: 448 |
| PR: P417 | REV: 449 |
| PR: P418 | REV: 450 |
| PR: P419 | REV: 451 |
| PR: P420 | REV: 452 |
| PR: P421 | REV: 453 |
| PR: P422 | REV: 454 |
| PR: P423 | REV: 455 |
| PR: P424 | REV: 456 |
| PR: P425 | REV: 457 |
| PR: P426 | REV: 458 |
| PR: P427 | REV: 459 |
| PR: P428 | REV: 460 |
| PR: P429 | REV: 461 |
| PR: P430 | REV: 462 |
| PR: P431 | REV: 463 |
| PR: P432 | REV: 464 |
| PR: P433 | REV: 465 |
| PR: P434 | REV: 466 |
| PR: P435 | REV: 467 |
| PR: P436 | REV: 468 |
| PR: P437 | REV: 469 |
| PR: P438 | REV: 470 |
| PR: P439 | REV: 471 |
| PR: P440 | REV: 472 |
| PR: P441 | REV: 473 |
| PR: P442 | REV: 474 |
| PR: P443 | REV: 475 |
| PR: P444 | REV: 476 |
| PR: P445 | REV: 477 |
| PR: P446 | REV: 478 |
| PR: P447 | REV: 479 |
| PR: P448 | REV: 480 |
| PR: P449 | REV: 481 |
| PR: P450 | REV: 482 |
| PR: P451 | REV: 483 |
| PR: P452 | REV: 484 |
| PR: P453 | REV: 485 |
| PR: P454 | REV: 486 |
| PR: P455 | REV: 487 |
| PR: P456 | REV: 488 |
| PR: P457 | REV: 489 |
| PR: P458 | REV: 490 |
| PR: P459 | REV: 491 |
| PR: P460 | REV: 492 |
| PR: P461 | REV: 493 |
| PR: P462 | REV: 494 |
| PR: P463 | REV: 495 |
| PR: P464 | REV: 496 |
| PR: P465 | REV: 497 |
| PR: P466 | REV: 498 |
| PR: P467 | REV: 499 |
| PR: P468 | REV: 500 |
| PR: P469 | REV: 501 |
| PR: P470 | REV: 502 |
| PR: P471 | REV: 503 |
| PR: P472 | REV: 504 |
| PR: P473 | REV: 505 |
| PR: P474 | REV: 506 |
| PR: P475 | REV: 507 |
| PR: P476 | REV: 508 |
| PR: P477 | REV: 509 |
| PR: P478 | REV: 510 |
| PR: P479 | REV: 511 |
| PR: P480 | REV: 512 |
| PR: P481 | REV: 513 |

[illegible]

| | | |
|---|--|-----------|
|  | STONE & WEBSTER ENGINEERING CORP. 711 LANDSHOUL, FLORIDA | |
| | TURNKEY NUCLEAR UNIT 4 | |
| | # 4119 | |
| INTAKE COOLING WATER SYSTEM | | |
| SHEET 1 | 5614-M-3019 | 019 38 |

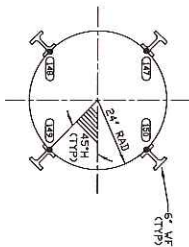



5614-N-2019

| ITEM | DESCRIPTION | REV | DATE | BY |
|------|--------------------------|-----|---------|----|
| 1 | ISSUED AS-BUILT FOR 10-4 | 1 | 10-1-80 | WJ |
| 2 | ISSUED AS-BUILT FOR 10-4 | 2 | 10-1-80 | WJ |
| 3 | ISSUED AS-BUILT FOR 10-4 | 3 | 10-1-80 | WJ |
| 4 | ISSUED AS-BUILT FOR 10-4 | 4 | 10-1-80 | WJ |
| 5 | ISSUED AS-BUILT FOR 10-4 | 5 | 10-1-80 | WJ |
| 6 | ISSUED AS-BUILT FOR 10-4 | 6 | 10-1-80 | WJ |
| 7 | ISSUED AS-BUILT FOR 10-4 | 7 | 10-1-80 | WJ |
| 8 | ISSUED AS-BUILT FOR 10-4 | 8 | 10-1-80 | WJ |
| 9 | ISSUED AS-BUILT FOR 10-4 | 9 | 10-1-80 | WJ |
| 10 | ISSUED AS-BUILT FOR 10-4 | 10 | 10-1-80 | WJ |
| 11 | ISSUED AS-BUILT FOR 10-4 | 11 | 10-1-80 | WJ |
| 12 | ISSUED AS-BUILT FOR 10-4 | 12 | 10-1-80 | WJ |
| 13 | ISSUED AS-BUILT FOR 10-4 | 13 | 10-1-80 | WJ |
| 14 | ISSUED AS-BUILT FOR 10-4 | 14 | 10-1-80 | WJ |
| 15 | ISSUED AS-BUILT FOR 10-4 | 15 | 10-1-80 | WJ |
| 16 | ISSUED AS-BUILT FOR 10-4 | 16 | 10-1-80 | WJ |
| 17 | ISSUED AS-BUILT FOR 10-4 | 17 | 10-1-80 | WJ |
| 18 | ISSUED AS-BUILT FOR 10-4 | 18 | 10-1-80 | WJ |
| 19 | ISSUED AS-BUILT FOR 10-4 | 19 | 10-1-80 | WJ |
| 20 | ISSUED AS-BUILT FOR 10-4 | 20 | 10-1-80 | WJ |
| 21 | ISSUED AS-BUILT FOR 10-4 | 21 | 10-1-80 | WJ |
| 22 | ISSUED AS-BUILT FOR 10-4 | 22 | 10-1-80 | WJ |
| 23 | ISSUED AS-BUILT FOR 10-4 | 23 | 10-1-80 | WJ |
| 24 | ISSUED AS-BUILT FOR 10-4 | 24 | 10-1-80 | WJ |
| 25 | ISSUED AS-BUILT FOR 10-4 | 25 | 10-1-80 | WJ |
| 26 | ISSUED AS-BUILT FOR 10-4 | 26 | 10-1-80 | WJ |
| 27 | ISSUED AS-BUILT FOR 10-4 | 27 | 10-1-80 | WJ |
| 28 | ISSUED AS-BUILT FOR 10-4 | 28 | 10-1-80 | WJ |
| 29 | ISSUED AS-BUILT FOR 10-4 | 29 | 10-1-80 | WJ |
| 30 | ISSUED AS-BUILT FOR 10-4 | 30 | 10-1-80 | WJ |
| 31 | ISSUED AS-BUILT FOR 10-4 | 31 | 10-1-80 | WJ |
| 32 | ISSUED AS-BUILT FOR 10-4 | 32 | 10-1-80 | WJ |
| 33 | ISSUED AS-BUILT FOR 10-4 | 33 | 10-1-80 | WJ |
| 34 | ISSUED AS-BUILT FOR 10-4 | 34 | 10-1-80 | WJ |
| 35 | ISSUED AS-BUILT FOR 10-4 | 35 | 10-1-80 | WJ |
| 36 | ISSUED AS-BUILT FOR 10-4 | 36 | 10-1-80 | WJ |
| 37 | ISSUED AS-BUILT FOR 10-4 | 37 | 10-1-80 | WJ |
| 38 | ISSUED AS-BUILT FOR 10-4 | 38 | 10-1-80 | WJ |
| 39 | ISSUED AS-BUILT FOR 10-4 | 39 | 10-1-80 | WJ |
| 40 | ISSUED AS-BUILT FOR 10-4 | 40 | 10-1-80 | WJ |
| 41 | ISSUED AS-BUILT FOR 10-4 | 41 | 10-1-80 | WJ |
| 42 | ISSUED AS-BUILT FOR 10-4 | 42 | 10-1-80 | WJ |
| 43 | ISSUED AS-BUILT FOR 10-4 | 43 | 10-1-80 | WJ |
| 44 | ISSUED AS-BUILT FOR 10-4 | 44 | 10-1-80 | WJ |
| 45 | ISSUED AS-BUILT FOR 10-4 | 45 | 10-1-80 | WJ |
| 46 | ISSUED AS-BUILT FOR 10-4 | 46 | 10-1-80 | WJ |
| 47 | ISSUED AS-BUILT FOR 10-4 | 47 | 10-1-80 | WJ |
| 48 | ISSUED AS-BUILT FOR 10-4 | 48 | 10-1-80 | WJ |
| 49 | ISSUED AS-BUILT FOR 10-4 | 49 | 10-1-80 | WJ |
| 50 | ISSUED AS-BUILT FOR 10-4 | 50 | 10-1-80 | WJ |
| 51 | ISSUED AS-BUILT FOR 10-4 | 51 | 10-1-80 | WJ |
| 52 | ISSUED AS-BUILT FOR 10-4 | 52 | 10-1-80 | WJ |
| 53 | ISSUED AS-BUILT FOR 10-4 | 53 | 10-1-80 | WJ |
| 54 | ISSUED AS-BUILT FOR 10-4 | 54 | 10-1-80 | WJ |
| 55 | ISSUED AS-BUILT FOR 10-4 | 55 | 10-1-80 | WJ |
| 56 | ISSUED AS-BUILT FOR 10-4 | 56 | 10-1-80 | WJ |
| 57 | ISSUED AS-BUILT FOR 10-4 | 57 | 10-1-80 | WJ |
| 58 | ISSUED AS-BUILT FOR 10-4 | 58 | 10-1-80 | WJ |
| 59 | ISSUED AS-BUILT FOR 10-4 | 59 | 10-1-80 | WJ |
| 60 | ISSUED AS-BUILT FOR 10-4 | 60 | 10-1-80 | WJ |
| 61 | ISSUED AS-BUILT FOR 10-4 | 61 | 10-1-80 | WJ |
| 62 | ISSUED AS-BUILT FOR 10-4 | 62 | 10-1-80 | WJ |
| 63 | ISSUED AS-BUILT FOR 10-4 | 63 | 10-1-80 | WJ |
| 64 | ISSUED AS-BUILT FOR 10-4 | 64 | 10-1-80 | WJ |
| 65 | ISSUED AS-BUILT FOR 10-4 | 65 | 10-1-80 | WJ |
| 66 | ISSUED AS-BUILT FOR 10-4 | 66 | 10-1-80 | WJ |
| 67 | ISSUED AS-BUILT FOR 10-4 | 67 | 10-1-80 | WJ |
| 68 | ISSUED AS-BUILT FOR 10-4 | 68 | 10-1-80 | WJ |
| 69 | ISSUED AS-BUILT FOR 10-4 | 69 | 10-1-80 | WJ |
| 70 | ISSUED AS-BUILT FOR 10-4 | 70 | 10-1-80 | WJ |
| 71 | ISSUED AS-BUILT FOR 10-4 | 71 | 10-1-80 | WJ |
| 72 | ISSUED AS-BUILT FOR 10-4 | 72 | 10-1-80 | WJ |
| 73 | ISSUED AS-BUILT FOR 10-4 | 73 | 10-1-80 | WJ |
| 74 | ISSUED AS-BUILT FOR 10-4 | 74 | 10-1-80 | WJ |
| 75 | ISSUED AS-BUILT FOR 10-4 | 75 | 10-1-80 | WJ |
| 76 | ISSUED AS-BUILT FOR 10-4 | 76 | 10-1-80 | WJ |
| 77 | ISSUED AS-BUILT FOR 10-4 | 77 | 10-1-80 | WJ |
| 78 | ISSUED AS-BUILT FOR 10-4 | 78 | 10-1-80 | WJ |
| 79 | ISSUED AS-BUILT FOR 10-4 | 79 | 10-1-80 | WJ |
| 80 | ISSUED AS-BUILT FOR 10-4 | 80 | 10-1-80 | WJ |
| 81 | ISSUED AS-BUILT FOR 10-4 | 81 | 10-1-80 | WJ |
| 82 | ISSUED AS-BUILT FOR 10-4 | 82 | 10-1-80 | WJ |
| 83 | ISSUED AS-BUILT FOR 10-4 | 83 | 10-1-80 | WJ |
| 84 | ISSUED AS-BUILT FOR 10-4 | 84 | 10-1-80 | WJ |
| 85 | ISSUED AS-BUILT FOR 10-4 | 85 | 10-1-80 | WJ |
| 86 | ISSUED AS-BUILT FOR 10-4 | 86 | 10-1-80 | WJ |
| 87 | ISSUED AS-BUILT FOR 10-4 | 87 | 10-1-80 | WJ |
| 88 | ISSUED AS-BUILT FOR 10-4 | 88 | 10-1-80 | WJ |
| 89 | ISSUED AS-BUILT FOR 10-4 | 89 | 10-1-80 | WJ |
| 90 | ISSUED AS-BUILT FOR 10-4 | 90 | 10-1-80 | WJ |
| 91 | ISSUED AS-BUILT FOR 10-4 | 91 | 10-1-80 | WJ |
| 92 | ISSUED AS-BUILT FOR 10-4 | 92 | 10-1-80 | WJ |
| 93 | ISSUED AS-BUILT FOR 10-4 | 93 | 10-1-80 | WJ |
| 94 | ISSUED AS-BUILT FOR 10-4 | 94 | 10-1-80 | WJ |
| 95 | ISSUED AS-BUILT FOR 10-4 | 95 | 10-1-80 | WJ |
| 96 | ISSUED AS-BUILT FOR 10-4 | 96 | 10-1-80 | WJ |
| 97 | ISSUED AS-BUILT FOR 10-4 | 97 | 10-1-80 | WJ |
| 98 | ISSUED AS-BUILT FOR 10-4 | 98 | 10-1-80 | WJ |
| 99 | ISSUED AS-BUILT FOR 10-4 | 99 | 10-1-80 | WJ |
| 100 | ISSUED AS-BUILT FOR 10-4 | 100 | 10-1-80 | WJ |

TURKEY POINT NUCLEAR UNIT 4
INTAKE COOLING WATER SYSTEM
SHEET 2

STONE & WEBSTER ENGINEERING CORP.
FT. LAUDERDALE, FLORIDA
5614-N-2019
D13
2/8



DETAIL A (TOP VIEW) — (N) — 

BASKET STRAINER BS-4-1402

[illegible]

NOTE:

1) FOR GENERAL NOTES AND REFERENCE DRAWINGS SEE 5614-P-5412-5 SH-1

2) ALL ISI INFORMATION, WAVE NUMBERS & LOCATIONS, ZONES, LINE NUMBERS & VAPOR RESTRAINT LOCATIONS ARE FOR ISI REFERENCE ONLY.

| ZONE NUMBER | LINE NUMBER |
|-------------|-------------|
| 4-166 | 207-13-L |
| 4-168 | 207-13-L |

3) BOLLING/NUIS INSTALLED ON THE 8-INCH BACKWASH DRAIN VALVE (4-50-286) ARE 5/8" A-193 Gr. B7 AND TUBED TO 65 F-416 (4302).

5614-P-542-S_SH 2.DWG



Reference 3

| | | |
|-----------------------------|---|-----------------------|
| REVISION NO.: 24 | PROCEDURE TITLE: INTAKE COOLING WATER SYSTEM | PAGE: 8 of 158 |
| PROCEDURE NO.: 4-NOP-019 | TURKEY POINT UNIT 4 | |

2.2.2 ICW Pumps (continued)

7. (continued)

- E. If diving activities are being performed on the east side of the stationary screens, the affected CW pumps shall be secured during the time the diver remains in the well. There are **NO** specific limitations on ICW pump usage when diving activities are performed on the east side of the stationary screens.
- 8. When starting ICW Pumps, the maximum flow rates for the in-service HXs may be exceeded. The high flow rate is acceptable provided the duration of high flow is minimized.
- 9. If time permits following the raking of an Intake Well, the respective Intake Well CW Pump should operate for at least 1 hour prior to starting the associated ICW Pump.

2.2.3 Basket Strainers

- 1. DP across the ICW Basket Strainers at the CCW HXs should **NOT** exceed 1.5 psid and at the TPCW HXs should **NOT** exceed 2.25 psid.
- 2. The maximum allowable ICW / CCW Basket Strainer element (screening) differential pressure is 10.0 psid per Section 7.1.2, Developmental Reference 6.P. Operation with differential pressures near or at 10.0 psid may challenge the structural integrity of the Basket Strainer element (screening).
- 3. While isolating an ICW/CCW Strainer, ICW flows below "Minimum Required ICW/CCW Flowrate" are permitted for up to 5 minutes, without declaring ICW System inoperable. If flow is below the "Minimum Required ICW/CCW Flowrate" for greater than 5 minutes, then the ICW System shall be declared inoperable at the time when flow initially went below the "Minimum Required ICW/CCW Flowrate."

Reference 4

PLANT SYSTEMS

3/4.7.3 INTAKE COOLING WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.3 The Intake Cooling Water System (ICW) shall be OPERABLE with:

- a. Three ICW pumps, and
- b. Two ICW headers.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

- a. With only two ICW pumps with independent power supplies OPERABLE, restore the inoperable ICW pump to OPERABLE status within 14 days or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. The provisions of Specification 3.0.4 are not applicable.
- b. With only one ICW pump OPERABLE or with two ICW pumps OPERABLE but not from independent power supplies, restore two pumps from independent power supplies to OPERABLE status within 72 hours or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- c. With only one ICW header OPERABLE, restore two headers to OPERABLE status within 72 hours or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.3 The Intake Cooling Water System (ICW) shall be demonstrated OPERABLE:

- a. In accordance with the Surveillance Frequency Control Program by verifying that each valve (manual, power-operated, or automatic) servicing safety-related equipment that is not locked, sealed, or otherwise secured in position is in its correct position; and
- b. In accordance with the Surveillance Frequency Control Program during shutdown, by verifying that:
 - 1) Each automatic valve servicing safety-related equipment actuates to its correct position on a SI test signal, and
 - 2) Each Intake Cooling Water System pump starts automatically on a SI test signal.
 - 3) Interlocks required for system operability are OPERABLE.

5) Facility Comment (Q34)

Attachment 3

Executive Summary of Challenged Questions and FPL Recommendation

Question 34:

This question is being challenged in accordance with NUREG 1021 REV 11, ES-403 for the following reason: “a question with an unclear stem that confused the applicants or did not provide all the necessary information”. Question 34 provides the operator with a Loss of CCW scenario in which one of the RCPs is experiencing High Motor Bearing temperatures. FPL recommends to accept both A and D distractors as correct for question 34 since two procedures that are applicable during the conditions described on the stem direct different actions, which are both applicable and correct.

Question 89:

This question is being challenged in accordance with NUREG 1021 REV 11, ES-403 for the following reason: “a question with an unclear stem that confused the applicants or did not provide all the necessary information”. Question 89 provides the operator with a scenario where one ICW/CCW strainer and one ICW/TPCW strainer are being backwashed simultaneously. Subsequent failures prevent restoration from backwashing operations. The question is to determine if a procedural limitation from 4-NOP-019, Intake Cooling Water System, has been violated and if the Unit Supervisor is required to apply TS 3.0.3. On question 89 it is unclear if an action statement was initially entered when the ICW/CCW backwash was started. Due to conflicting answers as a result of a missing piece of information FPL recommends to delete question 89 from the exam.

Question 94:

This question is being challenged in accordance with NUREG 1021 REV 11, ES-403 for the following reason: “a question with an unclear stem that confused the applicants or did not provide all the necessary information”. Question 94 is related knowledge of STA responsibilities. At Turkey Point, our plant administrative procedure 0-ADM-200, Operations Management Manual, is more restrictive than the Technical Specifications. This question did not specify which reference to use in order to formulate a response. Due to conflicting answers FPL recommends to delete question 94 from the exam.

Attachment 3

Facility Comments on question 34:

This question is being challenged in accordance with NUREG 1021 REV 11, ES-403 for the following reason: "a question with an unclear stem that confused the applicants or did not provide all the necessary information". Question 34 provides the operator with a Loss of CCW scenario in which one of the RCPs is experiencing High Motor Bearing temperatures. The way question 34 is presented to the candidates, does not specifically ask about procedure hierarchy or the minimum required actions for the given conditions; it only asks what are the RCP trip requirements in accordance with each procedure. In this case, A and D distractors both constitute correct answers:

- A distractor is correct based on the 3-ONOP-030, Component Cooling Water Malfunction, foldout page (Reference 1).

| 3-ONOP-030 | TURKEY POINT UNIT 3 | |
|--|---------------------|--|
| <p style="text-align: center;">FOLDOUT PAGE <u>For Procedure 3-ONOP-030</u></p> <p>TOTAL LOSS OF CCW FLOW</p> <ol style="list-style-type: none">1) Manually TRIP the reactor.2) CONFIRM reactor trip using the EOP network.3) STOP all RCPs.4) ISOLATE Letdown and Excess Letdown.5) ESTABLISH one Charging Pump running at maximum speed, and DISPATCH operator to establish emergency cooling water to <u>one</u> of the remaining two Charging Pumps per Attachment 1.6) MONITOR RCS pressure closely while running Charging Pump at maximum speed.7) WHEN Attachment 1 is COMPLETE, THEN OPERATE Charging Pump supplied with emergency cooling to maintain RCP seal cooling. | | |

- D distractor is correct based on the 3-ONOP-041.1, Reactor Coolant Pump Off-Normal, foldout page (Reference 2).

| 3-ONOP-041.1 | Reactor Coolant Pump Off-Normal | Approval Date: 5/3/16 |
|--|---------------------------------|--------------------------|
| <p style="text-align: center;">FOLDOUT PAGE FOR PROCEDURE 3-ONOP-041.1</p> <p>1. RCP STOPPING CRITERIA</p> <p>IF any of the following RCP limits are reached, THEN manually Trip the Reactor, and verify Reactor Trip using the EOP network, and then stop the affected RCP, and close PCV-3-455A, PZR Spray Valve Loop C, or PCV-3-455B, PZR Spray Valve Loop B, if applicable.</p> <ul style="list-style-type: none">* RCP pump bearing temperature on DCS - GREATER THAN OR EQUAL TO 225°F.* RCP motor bearing temperature on DCS - GREATER THAN OR EQUAL TO 195°F.* RCP stator winding temperature on DCS - GREATER THAN OR EQUAL TO 248°F. Note exception in Foldout Page Item 4.* Motor frame vibration, R-3-369 (Points 1, 2, 5, 6, 9, 10) - GREATER THAN OR EQUAL TO 5 MILS. Note exception in Foldout Page Item 4.* RCP shaft vibration, R-3-369 (Points 3, 4, 7, 8, 11, 12) - GREATER THAN OR EQUAL TO 20 MILS. Note exception in Foldout Page Item 4. | | |

Attachment 3

FPL recommendation: Entry conditions exist for both 3-ONOP-041.1 and 3-ONOP-030. A distractor is correct because on a loss of CCW, 3-ONOP-030 requires to trip all RCPs. D distractor is correct because 3-ONOP-041.1 RCP STOPPING CRITERIA for “RCP motor bearing temperature” is met, requiring 3B RCP to be tripped. FPL recommends to accept both A and D distractors as correct for question 34 since two procedures that are applicable during the conditions described on the stem direct different actions, which are both applicable and correct.

References:

1. 3-ONOP-030, Component Cooling Water Malfunction, foldout page.
2. 3-ONOP-041.1, Reactor Coolant Pump Off-Normal, foldout page

6) Supporting Documentation for Facility Comment (Q34)

| | | | | |
|--|---|-----|--|-------|
| Examination Outline Cross-reference: | Level | RO | | SRO |
| | Tier # | 2 | | |
| | Group # | 1 | | |
| | Topic and K/A # | 008 | | K3.03 |
| | Importance Rating | 4.1 | | |
| Knowledge of the effect that a loss or malfunction of the CCWS will have on the following: RCP | | | | |
| Proposed Question: RO Question # 34 | | | | |
| Given the following conditions: | | | | |
| <ul style="list-style-type: none"> Unit 3 experiences a total loss of CCW. 3B RCP Motor bearing temperature is 200°F and rising. | | | | |
| Which one of the following completes the statement below? | | | | |
| The RO is required to trip <u>(1)</u> as directed by <u>(2)</u> foldout page. | | | | |
| A. | (1) all the RCPs (2) 3-ONOP-030, Component Cooling Water Malfunction | | | |
| B. | (1) all the RCPs (2) 3-ONOP-041.1, RCP Malfunction | | | |
| C. | (1) ONLY 3B RCP (2) 3-ONOP-030, Component Cooling Water Malfunction | | | |
| D. | (1) ONLY 3B RCP (2) 3-ONOP-041.1, RCP Malfunction | | | |

NRC L-17-1 EXAM SECURE INFORMATION

| | | | |
|---|--|-------------------------------------|---------------------------------|
| Proposed Answer: A | | | |
| | | | |
| A. | Correct IAW 3-ONOP-030 Foldout page. | | |
| B. | Incorrect Part 2 is incorrect, but plausible since this is the appropriate procedure entered for RCP motor bearing high temperature. | | |
| C. | Incorrect Part 1 is incorrect but plausible since the criteria for stopping 3B RCP is met based on high motor bearing temperature. | | |
| D. | Incorrect Both parts are incorrect, but plausible per discussion above. Question parts are independent and plausible as a whole. | | |
| | | | |
| Technical Reference(s) | 3-ONOP-030 3-ONOP-041.1 | (Attach if not previously provided) | |
| | | | |
| Proposed Reference to be provided to applicants during examination: | | | N |
| | | | |
| Learning Objective: | LP 6902229 Obj 6 | (As available) | |
| | | | |
| Question Source: | Bank | | |
| | Modified Bank | | (Note changes or attach parent) |
| | New | X | |
| | | | |
| Question History: | Last NRC Exam: | | |
| | | | |
| Question Cognitive Level: | Memory or Fundamental Knowledge | | |
| | Comprehension or Analysis | X | |
| | | | |
| 10 CFR Part 55 Content: | 55.41 | 10 | |
| | 55.43 | | |

| |
|--|
| Administrative, normal, abnormal, and emergency operating procedures for the facility. |
| |
| Comments: |
| |
| |

| | | |
|------------------------------|---|------------------|
| REVISION NO.: 8A | PROCEDURE TITLE: COMPONENT COOLING WATER MALFUNCTION | PAGE: FOLDOUT |
| PROCEDURE NO.: 3-ONOP-030 | TURKEY POINT UNIT 3 | |

FOLDOUT PAGE
For Procedure 3-ONOP-030

TOTAL LOSS OF CCW FLOW

- 1) Manually **TRIP** the reactor.
- 2) **CONFIRM** reactor trip using the EOP network.
- 3) **STOP** all RCPs.
- 4) **ISOLATE** Letdown and Excess Letdown.
- 5) **ESTABLISH** one Charging Pump running at maximum speed, and **DISPATCH** operator to establish emergency cooling water to one of the remaining two Charging Pumps per Attachment 1.
- 6) **MONITOR** RCS pressure closely while running Charging Pump at maximum speed.
- 7) WHEN Attachment 1 is COMPLETE, THEN **OPERATE** Charging Pump supplied with emergency cooling to maintain RCP seal cooling.

LOSS OF CCW TO ANY COMPONENT

IF Component Cooling Water flow to any component cooled by CCW is lost, THEN **SHUT DOWN** the affected component.

CHARGING PUMP EMERGENCY COOLING CRITERIA

IF Cooling Water is **NOT** available to Charging Pumps, THEN **OPERATE** Charging Pump at maximum speed until cooling is restored from CCW System or per Attachment 1.

CCW PUMP STOPPING CRITERIA

IF any Component Cooling Water Pump is cavitating, THEN **STOP** the affected Component Cooling Water Pumps, and **PLACE** in PULL-TO-LOCK.

REACTOR TRIP CRITERIA

IF tripping a RCP is required, THEN manually **TRIP** the reactor prior to STOPPING the RCP.

RCP STOPPING CRITERIA

IF any RCP bearing temperature annunciator alarm actuates AND its associated motor bearing temperature is greater than 195°F, THEN **TRIP** reactor and **STOP** the affected RCPs.

CCW PUMPS, HEAT EXCHANGERS, AND FLOWS/LOADS

CCW System operation once CCW System Header has been restored shall be within the operating restrictions of 3-NOP-030 summarized as follows:

- N-1 CCW Pumps (where N = number of CCW HXs aligned to CCW)
- All CCW HXs in service when RHR in service
- With only two CCW HXs in service AND both RHR HXs aligned to CCW, **PLACE** two CCW Pumps in PULL-TO-LOCK.
- Maximum five out of six CCW Heat Loads.

| | | |
|----------------|---------------------------------|----------------|
| Procedure No.: | Procedure Title: | Page: |
| 3-ONOP-041.1 | Reactor Coolant Pump Off-Normal | Foldout |
| | | Approval Date: |
| | | 5/3/16 |

FOLDOUT PAGE FOR PROCEDURE 3-ONOP-041.1

1. RCP STOPPING CRITERIA

IF any of the following RCP limits are reached, **THEN** manually Trip the Reactor, and verify Reactor Trip using the EOP network, and then stop the affected RCP, and close PCV-3-455A, PZR Spray Valve Loop C, or PCV-3-455B, PZR Spray Valve Loop B, if applicable.

- * RCP pump bearing temperature on DCS - GREATER THAN OR EQUAL TO **225°F**.
- * RCP motor bearing temperature on DCS - GREATER THAN OR EQUAL TO **195°F**.
- * RCP stator winding temperature on DCS - GREATER THAN OR EQUAL TO **248°F**.
Note exception in Foldout Page Item 4.
- * Motor frame vibration, R-3-369 (Points 1, 2, 5, 6, 9, 10) - GREATER THAN OR EQUAL TO **5 MILS**.
Note exception in Foldout Page Item 4.
- * RCP shaft vibration, R-3-369 (Points 3, 4, 7, 8, 11, 12) - GREATER THAN OR EQUAL TO **20 MILS**.
Note exception in Foldout Page Item 4.

2. RCP SEAL CRITERIA FOR STOPPING RCP

IF any of the following RCP limits are reached, **THEN** manually Trip the Reactor, and verify the Reactor Tripped using the EOP network, and stop the affected RCP, Close the applicable RCP CBO Isolation Valve 303A, 303B, or 303C, and Close PCV-3-455A, PZR Spray Valve Loop C, or PCV-3-455B, PZR Spray Valve Loop B, if applicable.

- * RCP CBO temperatures on DCS - GREATER THAN OR EQUAL TO **260°F**.
- * RCP CBO flow exceeds **4.1 gpm**
- * Any Seal Stage differential pressure exceeds **2000 psid** **AND** respective CBO Isolation valve (CV-3-303A, 303B or 303C) is Open

3. FAST LOAD REDUCTION CRITERIA

IF any of the following RCP limits are reached, **THEN** perform 3-GOP-100, Fast Load Reduction.

- * RCP CBO Flow - GREATER THAN **3.7 gpm** **AND** increasing
- * DP across any Seal Stage - GREATER THAN **1700 psid** **AND** respective CBO Isolation valve (CV-3-303A, 303B or 303C) is Open
- * ALL of the following indications exist on the same RCP indicating a failed #3 Seal
 - RCP CBO Flow - LESS THAN **0.5 gpm**
 - RCP CBO isolation vale - OPEN
 - P3 pressure - LESS THAN **100 psig**
 - P2 pressure - GREATER THAN **1000 psig**

4. EXCEEDING VIBRATION OR STATOR TEMPERATURE LIMITS

- * For the basis of obtaining data for startup, for balancing an RCP, or for shutdown operations; the Electrical Maintenance Supervisor or Component Engineering Supervisor may authorize continued RCP operations with vibration level or stator winding temperature above stopping criteria noted in Foldout Page Item 2. This authorization is required to be obtained prior to starting the RCP.
- * When in EOP network, RCP stator winding temperature on DCS - GREATER THAN OR EQUAL TO 300°F.

5. RCP VIBRATION ASSESSMENT CRITERIA

IF motor frame vibration, R-3-369 (Points 1, 2, 5, 6, 9, 10), is greater than or equal to 3 mils, but less than 5 mils, **THEN** contact Engineering to evaluate the condition.

Reference 1

| | | |
|------------------------------|---|------------------|
| REVISION NO.: 8A | PROCEDURE TITLE: COMPONENT COOLING WATER MALFUNCTION | PAGE: FOLDOUT |
| PROCEDURE NO.: 3-ONOP-030 | TURKEY POINT UNIT 3 | |

FOLDOUT PAGE **For Procedure 3-ONOP-030**

TOTAL LOSS OF CCW FLOW

- 1) Manually **TRIP** the reactor.
- 2) **CONFIRM** reactor trip using the EOP network.
- 3) **STOP** all RCPs.
- 4) **ISOLATE** Letdown and Excess Letdown.
- 5) **ESTABLISH** one Charging Pump running at maximum speed, and **DISPATCH** operator to establish emergency cooling water to one of the remaining two Charging Pumps per Attachment 1.
- 6) **MONITOR** RCS pressure closely while running Charging Pump at maximum speed.
- 7) WHEN Attachment 1 is COMPLETE, THEN **OPERATE** Charging Pump supplied with emergency cooling to maintain RCP seal cooling.

LOSS OF CCW TO ANY COMPONENT

IF Component Cooling Water flow to any component cooled by CCW is lost, THEN **SHUT DOWN** the affected component.

CHARGING PUMP EMERGENCY COOLING CRITERIA

IF Cooling Water is **NOT** available to Charging Pumps, THEN **OPERATE** Charging Pump at maximum speed until cooling is restored from CCW System or per Attachment 1.

CCW PUMP STOPPING CRITERIA

IF any Component Cooling Water Pump is cavitating, THEN **STOP** the affected Component Cooling Water Pumps, and **PLACE** in PULL-TO-LOCK.

REACTOR TRIP CRITERIA

IF tripping a RCP is required, THEN manually **TRIP** the reactor prior to STOPPING the RCP.

RCP STOPPING CRITERIA

IF any RCP bearing temperature annunciator alarm actuates AND its associated motor bearing temperature is greater than 195°F, THEN **TRIP** reactor and **STOP** the affected RCPs.

CCW PUMPS, HEAT EXCHANGERS, AND FLOWS/LOADS

CCW System operation once CCW System Header has been restored shall be within the operating restrictions of 3-NOP-030 summarized as follows:

- N-1 CCW Pumps (where N = number of CCW HXs aligned to CCW)
- All CCW HXs in service when RHR in service
- With only two CCW HXs in service AND both RHR HXs aligned to CCW, **PLACE** two CCW Pumps in PULL-TO-LOCK.
- Maximum five out of six CCW Heat Loads.

FOLDOUT PAGE FOR PROCEDURE 3-ONOP-041.1**1. RCP STOPPING CRITERIA**

IF any of the following RCP limits are reached, **THEN** manually Trip the Reactor, and verify Reactor Trip using the EOP network, **and then stop the affected RCP**, and close PCV-3-455A, PZR Spray Valve Loop C, or PCV-3-455B, PZR Spray Valve Loop B, if applicable.

- * RCP pump bearing temperature on DCS - GREATER THAN OR EQUAL TO **225°F**.
- * **RCP motor bearing temperature on DCS - GREATER THAN OR EQUAL TO 195°F.**
- * RCP stator winding temperature on DCS - GREATER THAN OR EQUAL TO **248°F**.
Note exception in Foldout Page Item 4.
- * Motor frame vibration, R-3-369 (Points 1, 2, 5, 6, 9, 10) - GREATER THAN OR EQUAL TO **5 MILS**.
Note exception in Foldout Page Item 4.
- * RCP shaft vibration, R-3-369 (Points 3, 4, 7, 8, 11, 12) - GREATER THAN OR EQUAL TO **20 MILS**.
Note exception in Foldout Page Item 4.

2. RCP SEAL CRITERIA FOR STOPPING RCP

IF any of the following RCP limits are reached, **THEN** manually Trip the Reactor, and verify the Reactor Tripped using the EOP network, and stop the affected RCP, Close the applicable RCP CBO Isolation Valve 303A, 303B, or 303C, and Close PCV-3-455A, PZR Spray Valve Loop C, or PCV-3-455B, PZR Spray Valve Loop B, if applicable.

- * RCP CBO temperatures on DCS - GREATER THAN OR EQUAL TO **260°F**.
- * RCP CBO flow exceeds **4.1 gpm**
- * Any Seal Stage differential pressure exceeds **2000 psid** **AND** respective CBO Isolation valve (CV-3-303A, 303B or 303C) is Open

3. FAST LOAD REDUCTION CRITERIA

IF any of the following RCP limits are reached, **THEN** perform 3-GOP-100, Fast Load Reduction.

- * RCP CBO Flow - GREATER THAN **3.7 gpm** **AND** increasing
- * DP across any Seal Stage - GREATER THAN **1700 psid** **AND** respective CBO Isolation valve (CV-3-303A, 303B or 303C) is Open
- * ALL of the following indications exist on the same RCP indicating a failed #3 Seal
 - RCP CBO Flow - LESS THAN **0.5 gpm**
 - RCP CBO isolation vale - OPEN
 - P3 pressure - LESS THAN **100 psig**
 - P2 pressure - GREATER THAN **1000 psig**

4. EXCEEDING VIBRATION OR STATOR TEMPERATURE LIMITS

- * For the basis of obtaining data for startup, for balancing an RCP, or for shutdown operations; the Electrical Maintenance Supervisor or Component Engineering Supervisor may authorize continued RCP operations with vibration level or stator winding temperature above stopping criteria noted in Foldout Page Item 2. This authorization is required to be obtained prior to starting the RCP.
- * When in EOP network, RCP stator winding temperature on DCS - GREATER THAN OR EQUAL TO 300°F.

5. RCP VIBRATION ASSESSMENT CRITERIA

IF motor frame vibration, R-3-369 (Points 1, 2, 5, 6, 9, 10), is greater than or equal to 3 mils, but less than 5 mils, **THEN** contact Engineering to evaluate the condition.

7) Facility Comment (Q94)

Attachment 3

Executive Summary of Challenged Questions and FPL Recommendation

Question 34:

This question is being challenged in accordance with NUREG 1021 REV 11, ES-403 for the following reason: “a question with an unclear stem that confused the applicants or did not provide all the necessary information”. Question 34 provides the operator with a Loss of CCW scenario in which one of the RCPs is experiencing High Motor Bearing temperatures. FPL recommends to accept both A and D distractors as correct for question 34 since two procedures that are applicable during the conditions described on the stem direct different actions, which are both applicable and correct.

Question 89:

This question is being challenged in accordance with NUREG 1021 REV 11, ES-403 for the following reason: “a question with an unclear stem that confused the applicants or did not provide all the necessary information”. Question 89 provides the operator with a scenario where one ICW/CCW strainer and one ICW/TPCW strainer are being backwashed simultaneously. Subsequent failures prevent restoration from backwashing operations. The question is to determine if a procedural limitation from 4-NOP-019, Intake Cooling Water System, has been violated and if the Unit Supervisor is required to apply TS 3.0.3. On question 89 it is unclear if an action statement was initially entered when the ICW/CCW backwash was started. Due to conflicting answers as a result of a missing piece of information FPL recommends to delete question 89 from the exam.

Question 94:

This question is being challenged in accordance with NUREG 1021 REV 11, ES-403 for the following reason: “a question with an unclear stem that confused the applicants or did not provide all the necessary information”. Question 94 is related knowledge of STA responsibilities. At Turkey Point, our plant administrative procedure 0-ADM-200, Operations Management Manual, is more restrictive than the Technical Specifications. This question did not specify which reference to use in order to formulate a response. Due to conflicting answers FPL recommends to delete question 94 from the exam.

Attachment 3

Facility Comments on question 94 :

This question is being challenged in accordance with NUREG 1021 REV 11, ES-403 for the following reason: "a question with an unclear stem that confused the applicants or did not provide all the necessary information". Question 94 is related to operator's knowledge on STA responsibilities.

Attachment 3

- At Turkey Point our plant administrative procedure 0-ADM-200, Operations Management Manual, is more restrictive than the Technical Specification requirement. Technical Specifications Administrative Controls Section allows for a NPS (Shift Manager) to assume the STA position. From the Tech Spec Administrative Controls (Reference 5) stand point the STA is allowed to assume the command and control responsibilities and C is the correct answer:

ADMINISTRATIVE CONTROLS

TABLE 6.2-1

MINIMUM SHIFT CREW COMPOSITION

| POSITION | NUMBER OF INDIVIDUALS REQUIRED TO FILL POSITION | | |
|----------|---|---|--|
| | BOTH UNITS IN MODE 1, 2, 3, or 4 | BOTH UNITS IN MODE 5 or 6 OR DEFUELED | ONE UNIT IN MODE 1, 2, 3, or 4 AND ONE UNIT IN MODE 5 or 6 or DEFUELED |
| NPS | 1 | 1 | 1 |
| SRO | 1 | none** | 1 |
| RO | 3* | 2* | 3* |
| AO | 3* | 3* | 3* |
| STA | 1*** | none | 1*** |

NPS - Nuclear Plant Supervisor with a Senior Operator license

SRO - Individual with a Senior Operator license

RO - Individual with an Operator license

AO - Auxiliary Operator

STA - Shift Technical Advisor

The shift crew composition may be one less than the minimum requirements of Table 6.2-1 for a period of time not to exceed 2 hours in order to accommodate unexpected absence of on-duty shift crew members provided immediate action is taken to restore the shift crew composition to within the minimum requirements of Table 6.2-1. This provision does not permit any shift crew position to be unmanned upon shift change due to an oncoming shift crewman being late or absent.

During any absence of the Nuclear Plant Supervisor from the control room while a unit is in MODE 1, 2, 3, or 4, an individual (other than the Shift Technical Advisor) with a valid Senior Operator license shall be designated to assume the control room command function. During any absence of the Nuclear Plant Supervisor from the control room while both units are in MODE 5 or 6, an individual with a valid Senior Operator license or Operator license shall be designated to assume the control room command function.

* At least one of the required individuals must be assigned to the designated position for each unit.

** At least one licensed Senior Operator or licensed Senior Operator Limited to Fuel Handling must be present during CORE ALTERATIONS on either unit, who has no other concurrent responsibilities.

*** The STA position may be filled by the Nuclear Plant Supervisor or an individual with a Senior Operator license who meets the 1985 NRC Policy Statement on Engineering Expertise on Shift.

Attachment 3

- Procedural limitations present in 0-ADM-200, Operations Management Manual, (Reference 6) prevent the STA to assume command and control functions. In this case D distractor is the correct answer.

| 0-ADM-200 | TURKEY POINT PLANT | |
|---|--------------------|--|
| 3.0 RESPONSIBILITIES (continued) | | |
| 4. E. (continued) | | |
| <ul style="list-style-type: none">• Remains within 10 minutes of the Control Room.• When directed in the EOP network, monitors Critical Safety Function Status Trees in accordance with 3/4-EOP-F-0.• Provides an independent, dedicated concern for the safety of the Turkey Point Nuclear Plant by advising the Shift Manager on actions to terminate or mitigate the consequences of such events.• Serves in an advisory capacity only and does NOT assume command or control functions.• During an accident situation, the STA remains in the Control Room and assesses plant conditions. Upon entry into the EOP network, the STA ceases collateral duties and gives full attention to the primary duty of independent assessment of core safety. In performing this assessment, the STA does the following: | | |

FPL recommendation: Question 94 did not specify to answer in accordance with Tech Specs or 0-ADM-200. If answering from the Tech Specs point of view, the STA is allowed to assume Command and Control functions as Tech Specs allows dual role to be assumed for the STA and Shift Manager positions (at Turkey Point all STAs are SRO licensed). 0-ADM-200 does not allow the STA to assume Command and Control functions. Based on the standard used to answer this question the candidates will arrive at conflicting answers as it refers to the ability of the STA to assume Command and Control functions. Due to conflicting answers FPL recommends to delete question 94 from the exam.

Reference:

5. Tech Spec Table 6.2-1. (Reference 5).
6. 0-ADM-200, Operations Management Manual (Reference 6)

8) Supporting Documentation for Facility Comment (Q94)

| | | | | |
|--|--|----|--|-------|
| Examination Outline Cross-reference: | Level | RO | | SRO |
| | Tier # | | | 3 |
| | Group # | | | 1 |
| | Topic and K/A # | G1 | | 2.1.1 |
| | Importance Rating | | | 4.2 |
| Conduct of Operations: Knowledge of conduct of operations requirements. | | | | |
| Proposed Question: SRO Question # 94 | | | | |
| <p>Given the following conditions:</p> <ul style="list-style-type: none"> Unit 3 is in MODE 5. Unit 4 is in MODE 4. <p>Which one of the following identifies the responsibilities of the SRO assigned to the STA position?</p> <p>The SRO assigned to the STA <u>(1)</u> required to remain within 10 minutes of the control room and <u>(2)</u> allowed to assume command and control responsibilities.</p> | | | | |
| A. | (1) is NOT (2) is | | | |
| B. | (1) is NOT (2) is NOT | | | |
| C. | (1) is (2) is | | | |
| D. | (1) is (2) is NOT | | | |
| Proposed Answer: D | | | | |
| A. | <p>Incorrect</p> <p>Both parts incorrect; Plausible because the US with STA responsibilities is not required to be in the control room per ADM-200, but because Unit 4 is in Mode 1, they must be within 10 minutes of the control room</p> | | | |

NRC L-17-1 EXAM SECURE INFORMATION

| | | | |
|---|---|-------------------------------------|---------------------------------|
| B. | Incorrect Wrong for same reason as Option A part 1. Part 2 Plausible because the applicant may consider that unit 3 is in Mode 5 and STA duties are not required. | | |
| C. | Incorrect 2 nd part is incorrect; plausible because Unit 3 is in MODE 5 and an STA is not required in MODE 5 IAW Tech spec Table 6.2-1. | | |
| D. | Correct IAW 0-ADM-200. | | |
| | | | |
| Technical Reference(s) | 0-ADM-200 | (Attach if not previously provided) | |
| | | | |
| Proposed Reference to be provided to applicants during examination: | | N | |
| | | | |
| Learning Objective: | 6902025 Obj. 5 | (As available) | |
| | | | |
| Question Source: | Bank | | |
| | Modified Bank | | (Note changes or attach parent) |
| | New | X | |
| | | | |
| Question History: | Last NRC Exam: | | |
| | | | |
| Question Cognitive Level: | Memory or Fundamental Knowledge | X | |
| | Comprehension or Analysis | | |
| | | | |
| 10 CFR Part 55 Content: | 55.41 | | |
| | 55.43 | 1 | |
| Conditions and limitations in the facility license | | | |
| | | | |
| Comments: | | | |
| | | | |
| | | | |

| | | |
|-----------------------------|--|-----------------------|
| REVISION NO.: 31 | PROCEDURE TITLE: OPERATIONS MANAGEMENT MANUAL | PAGE: 13 of 72 |
| PROCEDURE NO.: 0-ADM-200 | TURKEY POINT PLANT | |

3.0 RESPONSIBILITIES (continued)

4. Control Room Supervisor (CRS) - The CRS reports to the SM. If assigned to the Work Control Center, the CRS reports to the Work Control Center Supervisor (WCCS) during an outage and the SM during non-outage times. The CRS is responsible for:
 - A. Reviewing and approving Plant Work Orders electronically via NAMS for Pre-reviews and eWP.
 - B. Maintaining the equipment out-of-service book in accordance with 0-ADM-213, Technical Specification Related Equipment and Risk Significant SSC Out-Of-Service Logbook.
 - C. Reviewing and approving clearances.
 - D. Coordinating the activities from the Work Control Center, when assigned to the Work Control Center.

NOTE

- The STA position shall be manned when one or both units are in MODES 1, 2, 3, or 4.
- The STA position may be vacant for a period of time **NOT** to exceed 2 hours for emergency reasons provided immediate action is taken to fill the STA position to meet or exceed the minimum requirements. This provision does **NOT** permit any STA position to be unmanned upon shift change due to an oncoming STA being late or absent.

E. When assigned Shift Technical Advisor responsibilities, the Unit Supervisor:

- Monitors Ultimate Heat Sink performance by trending ICW/CCW Heat Exchanger performance in accordance with 3/4-OSP-019.4, CCW Heat Exchanger Performance Monitoring.
- Reviews Temporary System Alterations (TSA) in accordance with EN-AA-205-1102, Temporary Configuration Changes
- Supports Post Trip Reviews (PTR) in accordance with 0-ADM-511, Post Trip Review (PTR).
- Maintains Continuing Training Requirements per TPD-E05, STA Initial and Continuing Training Program, and 0-EPIP-20201, Maintaining Emergency Preparedness Radiological Emergency Plan Training.

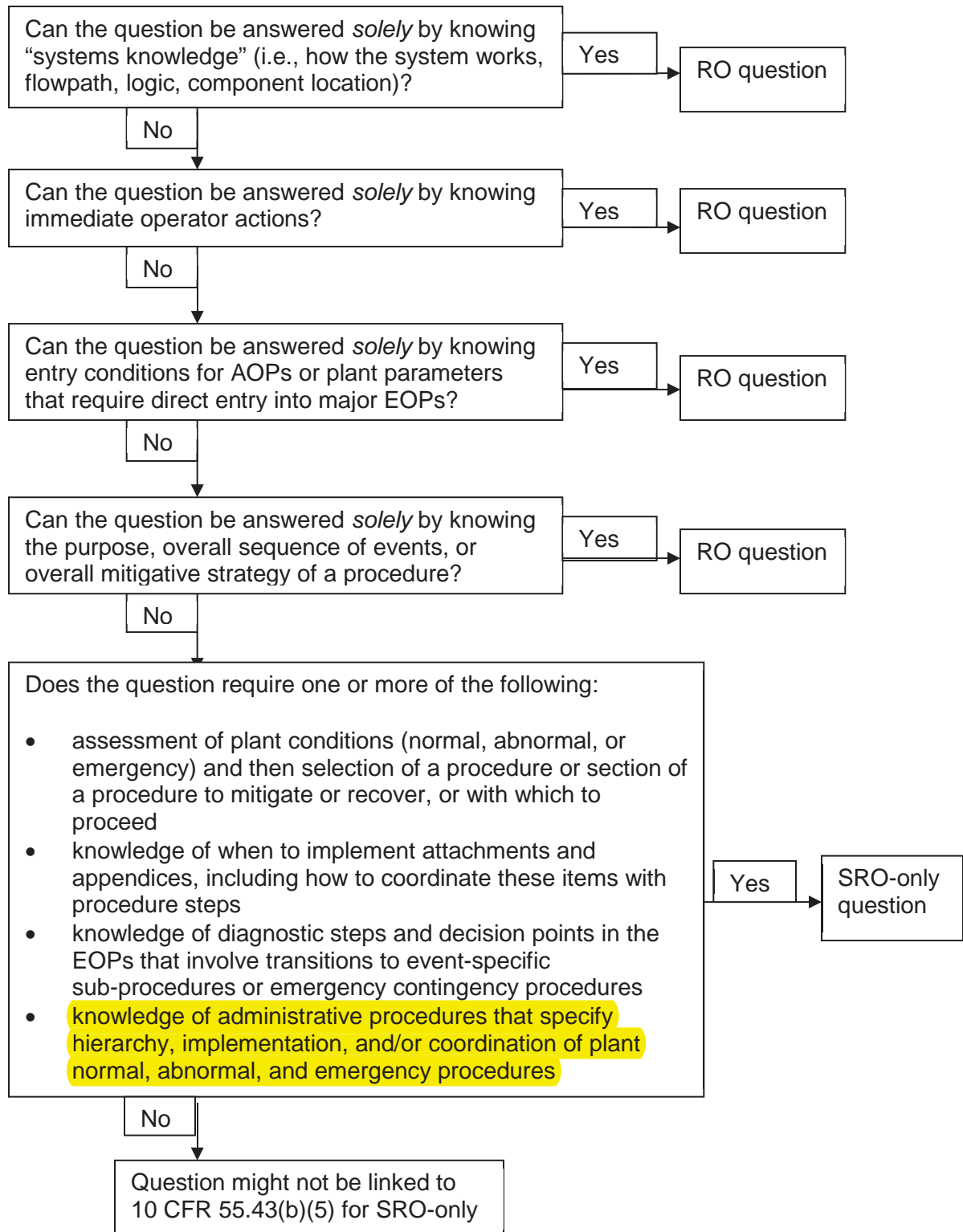
| | | |
|-----------------------------|--|-----------------------|
| REVISION NO.: 31 | PROCEDURE TITLE: OPERATIONS MANAGEMENT MANUAL TURKEY POINT PLANT | PAGE: 14 of 72 |
| PROCEDURE NO.: 0-ADM-200 | | |

3.0 RESPONSIBILITIES (continued)

4. E. (continued)

- Remains within 10 minutes of the Control Room.
- When directed in the EOP network, monitors Critical Safety Function Status Trees in accordance with 3/4-EOP-F-0.
- Provides an independent, dedicated concern for the safety of the Turkey Point Nuclear Plant by advising the Shift Manager on actions to terminate or mitigate the consequences of such events.
- Serves in an advisory capacity only and does **NOT** assume command or control functions.
- During an accident situation, the STA remains in the Control Room and assesses plant conditions. Upon entry into the EOP network, the STA ceases collateral duties and gives full attention to the primary duty of independent assessment of core safety. In performing this assessment, the STA does the following:
 - a. Independently evaluates plant response, diagnoses the event, and verifies maintenance of plant safety functions.
 - b. Maintains a broad, big-picture perspective of the event.
 - c. Based on assessment of the relevant facts and data, makes recommendations concerning maintenance of safety functions to the Shift Manager.
- Is relieved of accident assessment responsibilities only by another STA.

**Figure 2-2 Screening for SRO-Only Linked to 10 CFR 55.43(b)(5)
(Assessment and Selection of Procedures)**



Reference 5

ADMINISTRATIVE CONTROLS

PLANT STAFF

6.2.2 The plant organization shall be subject to the following:

- a. Each on-duty shift shall be composed of at least the minimum shift crew composition shown in Table 6.2-1;
- b. DELETED
- c. At least two licensed Operators shall be present in the control room during reactor startup, scheduled reactor shutdown and during recovery from reactor trips. In addition, while either unit is in MODE 1, 2, 3, or 4, at least one licensed Senior Operator shall be in the control room;
- d. A Health Physics Technician* shall be on site when fuel is in the reactor;
- e. All CORE ALTERATIONS shall be observed and directly supervised by either a licensed Senior Operator or licensed Senior Operator Limited to Fuel Handling who has no other concurrent responsibilities during this operation; and
- f. DELETED
- h. The Operations Supervisor shall hold a Senior Reactor Operator License.
- i. The Operations Manager shall either:
 - 1. hold or have held a Senior Reactor Operator License on the Turkey Point Plant; or,
 - 2. have held a Senior Reactor Operator License on a similar plant (i.e., another pressurized water reactor); or
 - 3. have completed the Turkey Point Plant Senior Management Operations Training Course. (i.e., certified at an appropriate simulator for equivalent senior operator knowledge level.)

* The Health Physics Technician composition may be less than the minimum requirements for a period of time not to exceed 2 hours, in order to accommodate unexpected absence, provided immediate action is taken to fill the required positions.

Reference 5

ADMINISTRATIVE CONTROLS

TABLE 6.2-1

MINIMUM SHIFT CREW COMPOSITION

| POSITION | NUMBER OF INDIVIDUALS REQUIRED TO FILL POSITION | | |
|----------|---|---|--|
| | BOTH UNITS IN MODE 1, 2, 3, or 4 | BOTH UNITS IN MODE 5 or 6 OR DEFUELED | ONE UNIT IN MODE 1, 2, 3, or 4 AND ONE UNIT IN MODE 5 or 6 or DEFUELED |
| NPS | 1 | 1 | 1 |
| SRO | 1 | none** | 1 |
| RO | 3* | 2* | 3* |
| AO | 3* | 3* | 3* |
| STA | 1*** | none | 1*** |

NPS - Nuclear Plant Supervisor with a Senior Operator license

SRO - Individual with a Senior Operator license

RO - Individual with an Operator license

AO - Auxiliary Operator

STA - Shift Technical Advisor

The shift crew composition may be one less than the minimum requirements of Table 6.2-1 for a period of time not to exceed 2 hours in order to accommodate unexpected absence of on-duty shift crew members provided immediate action is taken to restore the shift crew composition to within the minimum requirements of Table 6.2-1. This provision does not permit any shift crew position to be unmanned upon shift change due to an oncoming shift crewman being late or absent.

During any absence of the Nuclear Plant Supervisor from the control room while a unit is in MODE 1, 2, 3, or 4, an individual (other than the Shift Technical Advisor) with a valid Senior Operator license shall be designated to assume the control room command function. During any absence of the Nuclear Plant Supervisor from the control room while both units are in MODE 5 or 6, an individual with a valid Senior Operator license or Operator license shall be designated to assume the control room command function.

* At least one of the required individuals must be assigned to the designated position for each unit.

** At least one licensed Senior Operator or licensed Senior Operator Limited to Fuel Handling must be present during CORE ALTERATIONS on either unit, who has no other concurrent responsibilities.

*** The STA position may be filled by the Nuclear Plant Supervisor or an individual with a Senior Operator license who meets the 1985 NRC Policy Statement on Engineering Expertise on Shift.

Reference 6

| | | |
|-----------------------------|--|-----------------------|
| REVISION NO.: 31 | PROCEDURE TITLE: OPERATIONS MANAGEMENT MANUAL TURKEY POINT PLANT | PAGE: 14 of 72 |
| PROCEDURE NO.: 0-ADM-200 | | |

3.0 RESPONSIBILITIES (continued)

4. E. (continued)

- Remains within 10 minutes of the Control Room.
- When directed in the EOP network, monitors Critical Safety Function Status Trees in accordance with 3/4-EOP-F-0.
- Provides an independent, dedicated concern for the safety of the Turkey Point Nuclear Plant by advising the Shift Manager on actions to terminate or mitigate the consequences of such events.
- Serves in an advisory capacity only and does **NOT** assume command or control functions.
- During an accident situation, the STA remains in the Control Room and assesses plant conditions. Upon entry into the EOP network, the STA ceases collateral duties and gives full attention to the primary duty of independent assessment of core safety. In performing this assessment, the STA does the following:
 - a. Independently evaluates plant response, diagnoses the event, and verifies maintenance of plant safety functions.
 - b. Maintains a broad, big-picture perspective of the event.
 - c. Based on assessment of the relevant facts and data, makes recommendations concerning maintenance of safety functions to the Shift Manager.
- Is relieved of accident assessment responsibilities only by another STA.