RTYPE H6.02

PILGRIM NUCLEAR POWER STATION

Procedure No. 2.2.94

SEAWATER SYSTEM

Stop
Think
Act
Review

CONTINUOUS USE

MSTP RELATED

INFORMATION ONLY

Use restricted to reference

REVISION LOG

REVISION 97 **Date Originated 2/06**

Pages Affected	Description
7	Add ER05119148 to References.
39,45	Add changes reflecting operation of 28-HO-110A through D pressure indicator root valves.

REVISION 96 **Date Originated 11/05**

Pages Affected	Description
	(Revisions 90 through 95 were omitted due to MERLIN revision numbering scheme.)
188	Correct Seawater Pump ID number for recording amperage readings.

REVISION 89 **Date Originated 7/05**

Pages Affected	Description
3,17	Add normal operating Administrative Limits for Main Condenser parameters.
4,5,68,69	Delete Seawater Pump Column Mussel Treatment section and Attachment (formerly Attachment 15), and from Purpose and Scope as flushing Seawater Pump Column with fresh water is no longer performed.
7	Clarify PDC99-01-06 title by adding "2 for inner column".
7,8	Add PDC03-64 and PNPS 2.1.22 to References.
9,11,12	Update Discussion of biofouling program to address current activities and to include discussion of hydroids. (CR-PNP-2004-02792)
79,100,122,153, 183,209	Resequence steps to turn down H_2 injection just before Condenser backwash (CR-PNP-2005-1148 CA-05).
183,192,209,219	Add steps to make appropriate notifications and change the ETS injection rate as specified by Engineering guidance and using appropriate Station Procedures.

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This Procedure provides a detailed instruction for Operations personnel to perform the following:

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[3] Two Pump Operation from Single Pump Operation

[4] Backwashing of the Main Condenser

[5] Backwashing of the Main Condenser - Heat Treating

[6] Seawater Pump Bearing Lubrication

[7] Traveling Screens and Screenwash System Operation

[8] Dewatering and Refilling Seawater Pump Bays and/or Condenser Inlet Tunnels

[9] Plugging of Condenser Tube Leaks or Other Maintenance of Water Boxes during Operation

[10] Mussel Vacuuming During Backwashing

1.2 EMERGENCY OPERATION

[1] Emergency backwash of the Main Condenser is performed in accordance with PNPS 2.4.154 Attachment 4.

[2] Refer to PNPS 5.3.9, *"Offshore Oil Spill"*.

1.3 ABNORMAL OPERATION

[1] Refer to PNPS 2.4.33, *"Condenser Chloride Intrusion"*.

[2] Refer to PNPS 2.4.154, *"Intake Structure Fouling"*.

2.0 REFERENCES

2.1 DEVELOPMENTAL

[1] Corrective Actions QA Recommendation 88-1.4-5.1

[2] Final Safety Analysis Report FSAR

(a) Section 10.8.4.2, Fire Water Supply System

(b) Section 11.6, Circulating Water System

(c) Section 13.4.3.3.7, Preoperational Test Program, Screenwash System

(d) Section 13.4.3.3.8, Preoperational Test Program, Circulating Water System

[3] GE SIL 380, Rev. 1, BWR Core Thermal Hydraulic Stability

[4] INPO Action Item CY.3-1, "Cycling Of Hydrogen Injection May Contribute To High Drywell Dose Rates"

[5] NED Memo PS89-75, "Operating Limits on Sea Water Pump Motor Amps"

[6] NPDES Permit #MA0003557

[7] PCAQ 91-039, Resetting of Screenwash Pump Pressure Switches PS-3986 and PS-3987

[8] Piping and Instrumentation Diagrams (P&IDs)

(a) M210: Air Ejection and Offgas System

(b) M211: Circulating Water System

(c) M212: Service Water, Screenwash and Hypochlorination Systems

[9] Plant Design Changes (PDCs/FRNs/ERs)

(a) 84-25, Circulating Water Pump Discharge Pressure Instrument Modification

(b) 85-80C, Traveling Screens Modifications

(c) 86-123, Screenwash Dechlorination System Modifications

(d) 87-53, Condenser Scavenging Piping Replacement

(e) 94-03-06, Fire System Supplied Screenwash Header

(f) 94-03-21, Addition of Circulating Water Supply Conduit Local Vent Connections

(g) 94-20-02, Screenwash System Updates

(h) 95-03-104, Installation of a Position Indicator on the Rear Sluice Gate (X367C) Gear Box

(i) 95-03-149, Seawater Pumps Lube Water Header Modifications

(j) 96-16, Add SSW Temperature Alarm

(k) 96-16-6, PNPS FSAR Analysis on Service Water Inlet Temperature of 65°F

(l) 96-16-7, PNPS FSAR Analysis on Service Water Inlet Temperature of 75°F

(m) 97-04-05, Removal of Seawater Pumps Discharge Pressure Switches and Pressure Indicators

(n) 98-01-11, Circ. Motor Bearing Water and Triplex Filter Mod

(o) 98-01-31, Screenwash Piping Replacement

(p) 98-01-109, Abandon the Water Box Scavenging System

(q) 99-01-06, Circ. Water Pump Inspection Ports - 2 for inner column

(r) 99-04-02, Revise Wiring in C40A to LI-39031 and LI-39032

(s) 03-64, Circ. Water Pump Inspection Ports - 4 for outer annulus

(t) 05119148, Revise Drawings for Root Valves to PI-3904A through D

[10] PNPS Electrical Diagrams

(a) E157: Traveling Screen and Screenwash Pumps

(b) E159: Circulating Water System - Vacuum Breaker Valves

(c) E160: Circulating Water System - Circulating Water Pumps

(d) E161: Circulating Water System - Condenser Inlet Valves

(e) E162: Circulating Water System - Condenser Inlet Valves

(f) E163: Circulating Water System - Condenser Crossover Valves

(g) E164: Circulating Water System - Condenser Outlet Valves

(h) E165: Circulating Water System - Condenser Outlet Valves

(i) E166: Circulating Water System - Scavenging Pumps

(j) E206: Power to Triplex Filters

[11] Problem Reports (PRs)

(a) 94.9316, Intake Structure Sluice Gate (X-367C)

(b) 95.0040.01, SSW Inlet Temperature to the RBCCW Heat Exchangers May Exceed Design Limits During Thermal Backwash of the Main Condenser

(c) 97.9127, Circ Pumps Were Secured Without Securing Hypochlorination of SSW

[12] Procedures

(a) PNPS 3.M.3-14, *"Calibration Procedure for Recirculation Pump Megawatt Transducers"*

(b) PNPS 7.8.1, *"Chemistry Sample and Analysis Program"*

(c) PNPS 8.E.27, *"Calibration of Seawater Delta-T and Seawater Pump A Bearing Temperature Instruments"*

(d) PNPS 8.F.27, *"Seawater System Instruments Calibration"*

[13] Vendor Manuals

(a) V-0039: Allis Chalmers Motor Manual Broughton Corporation, Automated Filters

(b) V-0373: Nash Vacuum Pumps and Compressors

(c) V-1100: Hayward Screenwash Strainers

2.2 IMPLEMENTING

[1] PNPS 1.3.22, *"Oil Spill Prevention Control and Countermeasure Plan"*

[2] PNPS 2.1.14, *"Station Power Changes"*

[3] PNPS 2.1.22, *"Screenwash Biological Monitoring Program"*

[4] PNPS 2.1.37, *"Coastal Storm - Preparations and Actions"*

[5] PNPS 2.2.32, *"Salt Service Water System (SSW)"*

[6] PNPS 2.2.94.3, *"Seawater System Component Lineup"*

[7] PNPS 2.2.95, *"Chlorination System"*

[8] PNPS 2.4.33, *"Condenser Chloride Intrusion"*

[9] PNPS 2.4.154, *"Intake Structure Fouling"*

[10] PNPS 5.3.9, *"Offshore Oil Spill"*

3.0 DEFINITIONS

None

4.0 DISCUSSION

4.1 GENERAL

The Seawater System (also known as the Circulating Water System - CWS) provides the Main Condenser with a continuous supply of cooling water for removing the heat rejected by the Turbine Exhaust and Turbine Bypass System to maintain adequate vacuum in the Condenser. There are two Seawater Pumps, each with a rated flow of 155,500 GPM and each essentially serving one-half of each of the two Condensers. The basic function of the system is to provide adequate and continuous seawater flow to the Condenser. In order to provide continuous cooling water flow, the Traveling Screen and Screenwash System removes debris from the seawater. The Circulating Water Backwash System provides Condenser backwash for inlet tube sheet cleaning and heat treatment of living macrofouling attached to the Intake Structure and inlet conduits.

Eliminating operational impacts caused by mussels has been one of the most important issues affecting the Seawater System (see Section 4.4). Access to permit cleaning the Seawater Pump internals, where mussels grow and survive thermal backwashes, was created by installing ports in each pump's cover plate. FRN99-01-06 installed two 4-inch inspection ports (inner column) and PDC03-64 installed four more 4-inch inspection ports (outer annulus).

4.2 AUTOMATIC RESPONSE OF THE SYSTEM

[1] The water box vents open immediately after a Seawater Pump connected with that water box trips to prevent water hammer. The vents close after a time delay of 15 seconds.

[2] The Screenwash Pumps trip on low suction pressure less than 8 psig. The Screenwash Pump start permissive setpoint is 17.5 psig. (PCAQ91-039)

[3] The Screenwash Pumps trip and suction valves close on a loss of coolant accident signal.

[4] Under normal conditions, the traveling screens stop and cannot be started when pressure in the corresponding spray header falls below 50 psig. During heavy debris conditions and/or for performing minor preventive/corrective maintenance, the traveling screenwash water pressure interlock can be bypassed using the individual keylock bypass switches (keys #CR163, CR164, CR165, and CR166).

[5] The triplex filters in the lube water system automatically backwash on a predetermined frequency.

[6] Screenwash dechlorination pumps automatically start when their respective Screenwash Pump starts.

4.3 INTERLOCKS

De-energizing system components will impact various pump and valve interlocks and permissives. Review the appropriate electrical prints listed in Section 2.0 of this Procedure to determine the system impact when de-energizing various components.

4.3.1 Seawater Circulating System Interlocks

[1] A Seawater Pump can only be started if all of the following are satisfied:

- At least one of the water box inlet valves is 12% to 18% open.
- The corresponding water box outlet valve is full open.
- The other water box inlet valves is less than 18% open.
- Lube water flow is ≥ 8 GPM.

This configuration prevents a Seawater Pump from being started against a shutoff head or starting in a runout condition. Lube water flow is sensed by FS-3852 (for Seawater Pump P-105A) and FS-3862 (for Seawater Pump P-105B).

[1] Water box discharge valves (MO-3880, MO-3881, MO-3882, MO-3883) will not close with the associated Seawater Pump running unless the associated Outlet Crossover Valve (MO-3866, MO-3876) is open. This prevents a Seawater Pump from being operated in a shutoff head condition.

[2] The water box vent valves (AO-3841, AO-3842, AO-3843, AO-3844) to the affected water boxes will open immediately after a Seawater Pump trips to prevent a water hammer. The vent valve will stay open for 15 seconds and then reclose.

[3] Seawater Pump motor heaters will energize when the Seawater Pump is secured to prevent condensation in the pump motor. The motor heaters will de-energize when the pump is started.

4.3.2 Screenwash System Interlocks

[1] The Screenwash Pumps (P-213A/P-213B) will receive a trip signal and the suction valves will receive a close signal on a loss of coolant accident (LOCA) signal. The LOCA signals are high Drywell pressure (> 2.2 psig) and low-low Reactor water level (< -46").

[2] The Screenwash Pumps (P-213A/P-213B) will receive a trip signal on low suction pressure at less than 8 psig. (PCAQ91-039)

[3] The Screenwash Pumps (P-213A/P-213B) will receive a start permissive signal at greater than 17.5 psig. (PCAQ91-039)

[4] Traveling Screens (X-108A, B, C, D) will receive a start permissive signal at greater than 80 psig within the corresponding a spray header.

[5] Traveling Screens (X-108A, B, C, D) will receive a trip signal on low suction pressure at less than 50 psig within the corresponding a spray header.

4.4 BIOFOULING

The types of biofouling that grow at PNPS consist of macrofouling (mussels, barnacles, hydroids, etc.) and microfouling (biofilm or condenser tube slime). In addition to these attached biofouling organisms, there is also biological matter (alive and dead) that is loose or floating which can compromise the efficient operation of the Seawater System (seaweed, horseshoe crabs, jellyfish, etc.). Minimizing the impact of biofouling on equipment reliability is the function of the Biofouling Monitoring and Control Program administered by the Environmental Department. This program's primary goal is to maintain proper system cleanliness, which is accomplished using periodic control efforts as well as ongoing monitoring. The following activities are the key elements of the program:

- Optimizing performance of preventive or corrective biofouling activities/equipment (thermal backwashes, manual cleaning, chlorination, regular backwashes, and Traveling Screens and Screenwash System).

- Monitoring biofouling attachment by dive observation and underwater photo/video inspections (direct surveillance) of the Intake Structure.

- Trending plant parameters such as condenser differential delta-T (dDT) and seawater pump amps which are indirect measures of system cleanliness.

Eliminating operational impacts caused by blue mussels has proved to be one of the most important issues affecting the Seawater System. It is critical that planned actions (thermal backwashing and manual cleaning) occur before the mussels exceed 0.4 to 0.6 inch (10 to 15 mm) so that the shells can pass through the condenser tubes. Heat treatments rely on a combination of three factors to be effective: time, temperature (see Attachment 12), and coverage (tide height during the thermal backwash). The usual schedule is to perform five thermal backwashes in a regular year and four in a year in which there is a refueling outage (the springtime thermal prior to the RFO is skipped). Typically, one Seawater Pump head is manually cleaned during the power reduction just before each thermal backwash. The mussels growing in the upper elevation of the Seawater Pump heads can survive the lethal effects of heat treatment because the hot water does not reach them during a thermal backwash. They eventually grow large enough to block condenser tubes.

Hydroids are "soft" macrofouling animals that attach to submerged surfaces and grow in fibrous mats that resemble grass or turf. Like mussels, they are filter feeders and thrive on the microscopic food in the flowing intake water. There are at least two key differences between hydroids and mussels - hydroids grow faster than mussels, and their colonies regenerate much faster after individuals are killed. Hydroids have been present at PNPS since it was first built. Approximately 100 gallons of hydroids were collected on the traveling screens during a forced backwash in September 2004. (CR-PNP-2004-02792)

Monitoring activities are focused on obtaining reliable information regarding the degree (type, quantity, size) and location of biofouling attached to the intake and CWS surfaces. The MSTP contains repetitive tasks to perform underwater inspections of the Intake Structure to assess the degree of biofouling present. This information is compared with indirect, but more readily available, plant performance trend data to confirm the existing thermal backwash schedule - or sometimes, to adjust its timing, or include additional actions to improve system cleanliness.

During thermal backwashes, various critical indicators are tabulated (e.g., water temperatures and levels, observations from CW Pump access ports) to assess its effectiveness. Observation of material collected on the traveling screens during backwashes is also very useful in determining biofouling conditions. This is documented using Attachment 9.

Chlorination is an integral element of the biofouling control program. While primarily used to control microfouling (condenser tube deposits), it can also help prevent macrofouling. The Circulation Water chlorination system was modified in July 2005 so that injected hypochlorite is introduced only along the intake walls, where macrofouling growth is heaviest. The potential benefit from enhanced chlorine distribution is an overall reduction in the quantity of biofouling attached to the intake surfaces. Following the hydroid infestation in 2004, the root cause analysis concluded that increased intermittent chlorination would most likely not have completely prevented the problem. Therefore, the improvements to the CW hypo system piping and diffusers are not a corrective action to preclude recurrence.

This approach is most effective when starting with a clean system and then using chlorination to hamper the "colonization" of wetted surfaces by primary biofouling organisms (microfouling followed by barnacles). Mussels and hydroids tend to grow on roughened surfaces already covered with microfouling (biofilm or slime), rather than in areas that are bare or smooth. It is more efficient to reduce initial attachment by microfouling and barnacles, thereby making the surface more difficult to colonize by the more troublesome species (mussels and hydroids). Therefore, while intermittent chlorination may not eliminate an established colony of hydroids, and will not directly control mussels, its proper application can be effective in retarding the natural processes that lead to excessive macrofouling - especially if the surface is initially clean.

4.5 SCREENWASH OPERATIONS

[1] During routine screenwash operations, one Operator can operate all four traveling screens. While the traveling screens are rotating, the Operator shall periodically check screens for intrusion or fouling at least every 2 hours.

[2] When tide level is less than -4 feet as indicated on LI-3831A and LI-3831B, then at the discretion of the on-shift SRO, all four traveling screens may be turned simultaneously to avoid a sudden intrusion caused by low tide conditions coupled with sand patterns in the intake canal.

[3] If intrusion or fouling exists or is suspected from abnormal sea conditions or ΔP alarms, the SM should consider running all four traveling screens in FAST speed and increase the monitoring frequency of the Operator(s).

[4] If debris is coming over the traveling screens that requires picking, the Operator shall immediately notify the Control Room and request additional personnel assistance. The screenhouse must be continuously manned by sufficient Operators to remove debris which may come over the screens.

[5] During traveling screen operations, the Operator shall check for evidence of oil leakage at least every 4 hours by inspecting the discharge canal for oil sheens and leaks eminating from the gear boxes and chain enclosures. Observation of oil sheens is only required during daytime hours when adequate sunlight is available.

5.0 PRECAUTIONS AND LIMITATIONS

5.1 PRECAUTIONS

[1] Do not start Seawater Pumps with stop logs installed as there is no pump trip on a low pump well level condition. A minimum submergence of 10 feet (El. -10'2") is required for Seawater Pumps.

[2] Do not exceed pump restart limits as specified in the vendor manual.

Cold - 4 consecutive starts coasting to a stop in between starts
Hot - 3 consecutive starts

An interval of 10 minutes running or 20 minutes not running must elapse before every additional start.

[3] Once either Seawater Pump motor reaches a continuous 175 amps or greater at high tides, backwashing the Condenser should proceed within 24 hours. The Seawater Pump motors should not be operated (excluding transients) above 194 amps (indicated on Control Room ammeters) as this will detract from motor life.

[4] When the Station is operating with one Seawater Pump idle, operating personnel should be more cautious about a possible abnormal, abrupt differential temperature rise across the Main Condenser and should monitor the ΔT more frequently to prevent exceeding 32°F limitations as noted in Step 5.2[1](b) of this Procedure. During periods of time that only one Seawater Pump is in operation, computer points C046M (1-2 water box Δ temp), C047M (1-1 water box Δ temp), C048M (1-4 water box Δ temp), C049M (1-3 water box Δ temp), and CI050M (COND_TEMP_DIFF_1MINA) should be closely observed and appropriately trended to aid in following the Main Condenser differential temperatures. Attachment 8, Condenser Cooling Water Temperature Data Sheet, can also provide this monitoring of differential temperatures taken from TIU-3400 or computer points CWS018, CWS020, CWS034, CWS036, CWS038, CWS040 if these calculated points are not available.

[5] Prior to reducing power to backwash the Main Condenser, open the rear SSW sluice gate (X-367C) between the SSW Pump bays. After X-367C is open, cycle closed and open both the East SSW sluice gate (X-367A) and the West SSW sluice gate (X-367B) to ensure they are operable before power is reduced.

[6] When backwashing the Main Condenser, always open the rear SSW sluice gate (X-367C) between the Salt Service Water (SSW) Pump bays prior to closing the SSW sluice gate associated with the Seawater Pump bay to be backwashed. Failure to do this may result in pumping the A or B Salt Service Water Pump bays dry. This would not only result in pump damage but also loss of cooling water to the RBCCW and TBCCW heat exchangers.

[7] Do not use the portable sluice gate operator to seat or unseat the gate. The first and last inch of gate travel should be accomplished with the hand crank. Refer to Attachment 11 should the portable sluice gate operator clutch become disengaged.

[8] When a Condenser quadrant does not have cooling flow, the associated vapor valve to the SJAE must be closed to prevent choking of the SJAE. After cooling flow is restored, the vapor valves may be reopened once sufficient cooling has been established, as evidenced by the outlet temperature of the circulating water being at or near the outlet temperatures of the other in-service quadrants and stable.

[9] Nonheat-treated backwashes of the Main Condenser at any power level will increase the water temperature of the intake section being backwashed. During periods of high ambient seawater temperature (May through December), backwash temperatures at power levels as low as 30% may generate temperatures lethal to attached biofouling (mussels) with the potential of subsequent blockage of CWS components unless intake biofouling has been controlled by regular heat treatment or other mechanical/chemical means.

[10] When average Condenser ΔT approaches 32°F, a backwash shall be scheduled. If a backwash is not completed in a timely manner, a power reduction may be necessary to maintain the 32°F ΔT limit.

[11] Every attempt should be made to perform thermal backwashing during higher tide levels. If not performed at higher tide levels, elevated SSW temperatures may occur. (PR97.9300.01)

[12] When performing heat-treated (thermal) backwash, salt service water inlet temperature to the RBCCW heat exchangers shall not exceed 74.1°F. (PR95.0040.01)

[13] Maximum allowable screen differential level limit of 8 feet to protect traveling screens from damage.

[14] Minimum level limit of elevation -10 feet to protect the Seawater Pumps from low submergence.

[15] Minimum level limit of elevation -13'4" to ensure a Seawater Pump well level sufficient to feed the service water pump bay.

[16] During traveling screen operations, the Operator shall check for evidence of oil leakage at least every 4 hours by inspecting the discharge canal for oil sheens and leaks emanating from the gear boxes and chain enclosures. Observation of oil sheens is only required during daytime hours when adequate sunlight is available.

[17] Conductivity monitoring requires temperature compensation to accurately indicate the process conductivity. This temperature compensation results in a delay in the detection instrumentation circuitry. Therefore, when the process temperature rises (i.e., during a Condenser backwash), conductivity indication will also rise until the temperature compensation circuitry has had sufficient time to correct for the rise in temperature. This response time should be less than 5 minutes. If the rise in conductivity persists or continues to increase, then enter PNPS 2.4.33. Ensure Chemistry is also monitoring similar point(s) on the Chemistry Lab computer. Validate Control Room indications with Chemistry if a chloride intrusion is suspected.

5.2 EPA AND MASSACHUSETTS DEP LIMITATIONS (NPDES PERMIT)

[1] A rise or fall of more than 3°F above the normal steady state Condenser ΔT over a 60-minute period shall be prevented except:

(a) During normal load cycling, a temperature change of 10°F rise or fall over any 60-minute period will be allowed.

(b) The Condenser cooling water temperature at its point of discharge to Cape Cod Bay shall at no time exceed a 32°F rise over the temperature of the intake water. The discharge temperature shall at no time exceed 102°F. If either of these limits is exceeded, the PNPS Environmental Department should be notified by telephone as soon as possible.

[2] The current NPDES Permit requires that, for nonbackwash situations, seawater temperature limitations are as follows:

- The "instantaneous" maximum allowable temperature rise across the Main Condenser is limited to 32°F as monitored on EPIC point CI050M (COND_TEMP_DIFF_1MINA).

- The maximum allowable discharge temperature from the Main Condenser is 102°F as monitored on EPIC points CWS006 (Discharge Canal TE50A Temperature) and CWS008 (Discharge Canal TE51A Temperature).

- If the EPIC points identified above are not available, then alternate points that will allow for monitoring of the same parameter may be used.

[3] Heat-treat backwashes shall not be more frequent than 3 hours a day, twice a week for those periods required for the plant to operate most efficiently. Infrequent abnormal environment conditions may require this frequency to be doubled.

NOTES

- To meet the current NPDES Permit requirements for an "instantaneous maximum" temperature rise (°F) across the Condenser, use EPIC point CI050M. Computer points C054M and/or C055M should never exceed 32°F.
- Computer points C046M, C047M, C048M, and C049M for individual water box Δ temperatures are also available to be recorded/monitored and averaged to ensure not exceeding 32°F ΔT limit.
- The hourly BOP Log, primary EPIC point C050H, will be used to determine the average temperature rise (°F) across the Condenser. In the event this point is inoperable, monitor and record primary EPIC points C054H and/or C055H on Attachment 8.
- If none of the above computer points are available, then alternate readings will be taken from TSU-3400, located in the Control Room, and recorded on Attachment 8; or readings can be taken from the following computer points:

  CWS018, B Seawater Pump Disch Temp

  CWS020, A Seawater Pump Disch Temp

  CWS034, Water Box 1-1 West Outlet Temp

  CWS036, Water Box 1-2 West Outlet Temp

  CWS038, Water Box 1-3 East Outlet Temp

  CWS040, Water Box 1-4 East Outlet Temp

  1. Take the average of points CWS018 and CWS020. This will generate an average Condenser inlet temperature.
  2. Take the average of points CWS034, CWS036, CWS038, and CWS040. This will generate an average Condenser outlet temperature.
  3. Subtract the outlet average temperature from the inlet average temperature to get the average temperature change across the Condenser, ΔT.

- If Attachment 8 cannot be utilized for differential temperature monitoring while EPIC computer points/circuitry are unavailable, then TSU-3400 is to be used for monitoring.
- If at any time the Main Condenser 32°F ΔT is exceeded, the NPDES Permit limit is considered violated. Submit a Condition Report and immediately notify the PNPS Environmental Department.

[4] The temperature of the Condenser discharge during backwash shall at no time exceed a maximum temperature of 120°F. Temperature shall be monitored continuously while in backwash.

[5] To meet NPDES discharge limits for continuous chlorination of SSW, at least one Seawater Pump (Circulating Water Pump) must be in operation to provide dilution to the discharge canal. Additionally, SSW continuous chlorination must be secured for backwashes. (PR97.9127)

5.3 ALARA PRECAUTIONS

[1] For work in High Radiation Areas, maintain personnel exposure ALARA by using low dose areas as much as possible. Notify ALARA of any unusual exposure concerns.

[2] Ensure all personnel are aware of the need to minimize any time spent in the area of the HPCI turbine and steam lines while the turbine is running for ALARA considerations.

[3] Opening and/or closing of the Main Condenser Vapor Valves (AO-3703, AO-3704, AO-3710, and AO-3711) can affect dose rates and impact personnel exposure if work is taking place near any offgas process piping (Recombiner Room, Condenser Bay, and AOG 5' elevation).

5.4 ADMINISTRATIVE LIMITS

[1] The following Main Condenser parameters shall be maintained under normal operating conditions:

(a) Main Condenser vacuum ≥ 26" Hg (refer to PNPS 2.4.36 Section 3.0)

(b) Average hotwell temperature < 120°F (EPIC point C027M) (refer to ARP-EPIC)

(c) Individual hotwell temperatures < 122°F (EPIC points CON024/CON026) (refer to ARP-EPIC)

(d) Condenser cooling water discharge temperature shall be < 102°F (EPIC points CWS006/CWS008)

If any of the Main Condenser parameters listed above cannot be maintained, then Reactor power shall be reduced in accordance with PNPS 2.1.14 Sections 7.10 and 7.11.

6.0 PREREQUISITES

[1] Verify the Prerequisite Checklist in PNPS 2.2.94.3 (Attachment 1 of PNPS 2.2.94.3) has been performed.

7.0 PROCEDURE

7.1 NORMAL STARTUP AND SHUTDOWN

[1] **ENSURE** the Omniquard Monitoring Alarm System is in service for each Seawater Pump to be placed in service. **IF** the Omniguard Monitoring Alarm System is not in service, **THEN**:

- **INITIATE** corrective actions to restore the Omniguard Monitoring Alarm System

AND

- **INITIATE** compensatory measures to ensure Seawater Pump bearing temperature are being adequately monitored by other means approved by the SM.

7.1.1 Startup Seawater Pump A, P-105A

[1] **VERIFY** alarm **"SEAWATER PUMP A CLG WTR FLOW LO"** (C1R-D2) is CLEAR.

[2] **VERIFY** Seawater Pump A motor is warm (space heater operating).

[3] **PUT** the Screenwash System with screens C and D in service (**SEE** Section 7.8.2).

[4] **MOMENTARILY OPEN** the following vent valves:

- AO-3841 (1-4 Condenser Vent Valve)
- AO-3843 (1-2 Condenser Vent Valve)

[5] **CLOSE** the following vent valves:

- AO-3841 (1-4 Condenser Vent Valve)
- AO-3843 (1-2 Condenser Vent Valve)

[6] **PARTIALLY OPEN** the following Water Box Inlet valves (valve is 12 to 18% open when white light illuminates):

- MO-3871 (Water Box #4 Inlet Valve)
- MO-3873 (Water Box #2 Inlet Valve)

[7] **OPEN/VERIFY OPEN** the following Water Box outlet valves:

- MO-3883 (Water Box #2 Outlet Valve)
- MO-3881 (Water Box #4 Outlet Valve)

[8] **START** Seawater Pump A, P-105A, with control switch on Panel C1.

[9] **FULLY OPEN** the following Water Box Inlet Valves:

- MO-3871 (Water Box #4 Inlet Valve)
- MO-3873 (Water Box #2 Inlet Valve)

[10] **VERIFY** pump amperage drops (from an initial high starting amperage to a running amperage of about 150 amps).

[11] **VERIFY** VEX-108B, Intake Structure Supply Fan "B", is running in accordance with PNPS 2.2.45.

[12] **IF** seawater temperature is less than 30°F **OR IF** conditions are forcing debris up against the traveling screens, **DO NOT** remove the Screenwash System from service.

[13] **IF** the conditions of Step 7.1.1[12] do not exist after approximately 15 minutes of operation, **THEN REMOVE** traveling screens C and D from service in accordance with Section 7.8.7 of this Procedure.

7.1.2 Startup Seawater Pump B, P-105B

[1] **VERIFY** alarm **"SEAWATER PUMP B CLG WTR FLOW LO"** (C1R-D3) is CLEAR.

[2] **VERIFY** Seawater Pump B motor is warm (space heater operating).

[3] **PLACE** the Screenwash System with screens A and B in service (**SEE** Section 7.8.2).

[4] **MOMENTARILY OPEN** the following vent valves:

- AO-3842 (1-3 Condenser Vent Valve)
- AO-3844 (1-1 Condenser Vent Valve)

[5] **CLOSE** the following vent valves:

- AO-3842 (1-3 Condenser Vent Valve)
- AO-3844 (1-1 Condenser Vent Valve)

[6] **PARTIALLY OPEN** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3870 (Water Box #3 Inlet Valve)
- MO-3872 (Water Box #1 Inlet Valve)

[7] **OPEN/VERIFY OPEN** the following Water Box Outlet Valves:

- MO-3880 (Water Box #3 Outlet Valve)
- MO-3882 (Water Box #1 Outlet Valve)

[8] **START** Seawater Pump B, P-105B, with control switch on Panel C1.

[9] **FULLY OPEN** the following Water Box Inlet Valves:

- MO-3870 (Water Box #3 Inlet Valve)
- MO-3872 (Water Box #1 Inlet Valve)

[10] **VERIFY** pump amperage (drops from an initial high starting amperage to a running amperage of 150 amps).

[11] **VERIFY** VEX-108A, Intake Structure Supply Fan "A", is running in accordance with PNPS 2.2.45.

[12] IF seawater temperature is less than 30°F **OR** IF conditions are forcing debris up against the traveling screens, **DO NOT** remove the Screenwash System from service.

[13] IF the conditions of Step 7.1.2[12] do not exist after approximately 15 minutes of operation, **THEN REMOVE** traveling screens A and B from service in accordance with Section 7.8.7 of this Procedure.

7.1.3 Shutdown Seawater Pump A, P-105A

CAUTION

Opening and/or closing of the Main Condenser Vapor Valves (AO-3703, AO-3704, AO-3710, and AO-3711) can affect dose rates and impact personnel exposure if work is taking place near any offgas process piping (Recombiner Room, Condenser Bay, and AOG 5' elevation).

[1] **PRIOR** to opening/closing any Main Condenser Vapor Valve (AO-3703, AO-3704, AO-3710, and/or AO-3711), **NOTIFY** Radiation Protection.

[2] **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711

NOTE

Steps [3] and [4] must be performed together.

[3] **PARTIALLY CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3871 (Water Box #4 Inlet Valve)
- MO-3873 (Water Box #2 Inlet Valve)

[4] **WHEN** the first white light (12 to 18% OPEN position) comes on in Step 7.1.3[3], **THEN STOP** Seawater Pump A, P-105A.

[5] **FULLY CLOSE** the following Water Box Inlet Valves:

- MO-3871 (Water Box #4 Inlet Valve)
- MO-3873 (Water Box #2 Inlet Valve)

[6] **CLOSE** the following Water Box Outlet Valves:

- MO-3881 (Water Box #4 Outlet Valve)
- MO-3883 (Water Box #2 Outlet Valve)

[7] **REMOVE** Screenwash System screens C and D from service.

[8] **IF** Seawater Pumps A and B are both out of service, **THEN SECURE** continuous chlorination to the SSW System in accordance with PNPS 2.2.95.

- **ENSURE** SSW Hypochlorination System status changes are logged in the CRS log.
- **ENSURE** Chemistry is notified of SSW Hypochlorination System status changes.

7.1.4 Shutdown Seawater Pump B, P-105B

CAUTION

Opening and/or closing of the Main Condenser Vapor Valves (AO-3703, AO-3704, AO-3710, and AO-3711) can affect dose rates and impact personnel exposure if work is taking place near any offgas process piping (Recombiner Room, Condenser Bay, and AOG 5' elevation).

[1] PRIOR to opening/closing any Main Condenser Vapor Valve (AO-3703, AO-3704, AO-3710, and/or AO-3711), **NOTIFY** Radiation Protection.

[2] **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704

NOTE

Steps [3] and [4] must be performed together.

[3] **PARTIALLY CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates).

- MO-3870 (Water Box #3 Inlet Valve)
- MO-3872 (Water Box #1 Inlet Valve)

[4] WHEN the first white light (12 to 18% OPEN position) comes on in Step 7.1.4[3], THEN **STOP** Seawater Pump B, P-105B.

[5] **FULLY CLOSE** the following Water Box Inlet Valves:

- MO-3870 (Water Box #3 Inlet Valve)
- MO-3872 (Water Box #1 Inlet Valve)

[6] **CLOSE** the following Water Box Outlet Valves:

- MO-3880 (Water Box #3 Outlet Valve)
- MO-3882 (Water Box #1 Outlet Valve)

[7] **REMOVE** Screenwash System screens A and B from service.

[8] IF Seawater Pumps A and B are both out of service, THEN **SECURE** continuous chlorination to the SSW System in accordance with PNPS 2.2.95.

- **ENSURE** SSW Hypochlorination System status changes are logged in the CRS log.
- **ENSURE** Chemistry is notified of SSW Hypochlorination System status changes.

7.2 SINGLE PUMP OPERATION FROM TWO PUMP OPERATION

CAUTION

Single pump operation at too high of a Reactor power level can cause Main Condenser differential temperatures to exceed the EPA limit of 32°F or Main Condenser vacuum to degrade.

[1] **REDUCE** Reactor power to approximately 50% in accordance with PNPS 2.1.14, *"Station Power Changes"*, while constantly monitoring Main Condenser vacuum and differential temperatures.

CAUTION

Opening and/or closing of the Main Condenser Vapor Valves (AO-3703, AO-3704, AO-3710, and AO-3711) can affect dose rates and impact personnel exposure if work is taking place near any offgas process piping (Recombiner Room, Condenser Bay, and AOG 5' elevation).

[2] **PRIOR** to opening/closing any Main Condenser Vapor Valve (AO-3703, AO-3704, AO-3710, and/or AO-3711), **NOTIFY** Radiation Protection.

[3] **WHEN** removing Seawater Pump A from service, **PERFORM** the following:

(a) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711

NOTE

Steps [3](b) and [3](c) must be performed together.

(b) **PARTIALLY CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3871 (Water Box #4 Inlet Valve)
- MO-3873 (Water Box #2 Inlet Valve)

(c) **WHEN** the first white light (12 to 18% OPEN position) comes on in Step [3](b), **THEN STOP** Seawater Pump A, P-105A.

(d) **FULLY CLOSE** the following Water Box Inlet Valves:

- MO-3871 (Water Box #4 Inlet Valve)
- MO-3873 (Water Box #2 Inlet Valve)

NOTES

1. Refer to Precautions and Limitations Step 5.1[4] for recommended compensatory measures associated with 3-water box operation.
2. For optimum vacuum, the preferred alignment for establishing additional quadrant flow is via opening INL XOVER, MO-3875 (Crossover Valve for the 1-3 and 1-4 Inlet Water Box).
3. Prior to initiating 3-water box operation, consideration should be given to the following plant conditions:
   - Main Condenser vacuum (may degrade during 3-water box operation).
   - Intake Seawater temperature (a major factor on Condenser vacuum).
   - Duration of time in 3-water box operation (maneuvers in and out of 3-water box operation are maneuvers with an increased potential for a loss of vacuum event).

(e) To establish flow to an additional quadrant, **OPEN** INL XOVER, MO-3875 (Crossover Valve of the 1-3 and 1-4 Inlet Water Box) **OR** INL XOVER, MO-3865 (Crossover Valve of the 1-1 and 1-2 Inlet Water Box).

(f) Once circulating water outlet temperature indicates cooling has been re-established in either the 1-2 or 1-4 quadrant, **REOPEN** AO-3703, Cndsr A West Side Off Gas Valve SV-3703, **OR** AO-3711, Cndsr B East Side Off Gas Valve SV-3711, for corresponding water box.

[4] **WHEN** removing Seawater Pump B, P-105B, from service, **PERFORM** the following:

(a) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704

NOTE

Steps [4](b) and [4](c) must be performed together.

(b) **PARTIALLY CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3870 (Water Box #3 Inlet Valve)
- MO-3872 (Water Box #1 Inlet Valve)

(c) **WHEN** the first white light (12 to 18% OPEN position) comes on in Step [4](b), **THEN STOP** Seawater Pump B.

(d) **FULLY CLOSE** the following Water Box Inlet Valves:

- MO-3870 (Water Box #3 Inlet Valve)
- MO-3872 (Water Box #1 Inlet Valve)

NOTES

1. Refer to Precautions and Limitations Step 5.1[4] for recommended compensatory measures associated with 3-water box operation.
2. For optimum vacuum, the preferred alignment for establishing additional quadrant flow is via opening INL XOVER, MO-3875 (Crossover Valve for the 1-3 and 1-4 Inlet Water Box).
3. Prior to initiating 3-water box operation, consideration should be given to the following plant conditions:
   - Main Condenser vacuum (may degrade during 3-water box operation).
   - Intake Seawater temperature (a major factor on Condenser vacuum).
   - Duration of time in 3-water box operation (maneuvers in and out of 3-water box operation are maneuvers with an increased potential for a loss of vacuum event).

(e) To establish flow to an additional quadrant, **OPEN** INL XOVER, MO-3875 (Crossover Valve of the 1-3 and 1-4 Inlet Water Box) **OR** INL XOVER, MO-3865 (Crossover Valve of the 1-1 and 1-2 Inlet Water Box).

(f) Once circulating water outlet temperature indicates cooling has been re-established in the 1-1 or 1-3 quadrant, **REOPEN** AO-3710, Cndsr A West Side Off Gas Valve SV-3710, **OR** AO-3704, Cndsr B East Side Off Gas Valve SV-3704, for corresponding water box.

7.3 TWO PUMP OPERATION FROM SINGLE PUMP OPERATION

7.3.1 Recovery With Seawater Pump A Idle And Inlet Crossover Valves Closed

NOTE
Review Precaution 5.1[2] with regard to pump start limitations.

[1] **VERIFY** alarm **"SEAWATER PUMP A CLG WTR FLOW LO"** (C1R-D2) is CLEAR.

[2] **VERIFY** Seawater Pump A motor is warm (space heater operating).

[3] **PLACE** the Screenwash System with screens C and D in service (**SEE** Section 7.8.2).

[4] **OPEN/VERIFY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve)
- MO-3881 (Water Box #4 Outlet Valve)

[5] **CLOSE/VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve)
- MO-3871 (Water Box #4 Inlet Valve)

[6] **MOMENTARILY OPEN** the following vent valves:

- AO-3841 (1-4 Condenser Vent Valve)
- AO-3843 (1-2 Condenser Vent Valve)

[7] **CLOSE** the following vent valves:

- AO-3841 (1-4 Condenser Vent Valve)
- AO-3843 (1-2 Condenser Vent Valve)

[8] **PARTIALLY OPEN** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3871 (Water Box #4 Inlet Valve)
- MO-3873 (Water Box #2 Inlet Valve)

[9] **WHEN** either Water Box Inlet Valve MO-3873 or MO-3871 indicates 12 to 18% OPEN, **THEN START** Seawater Pump A, P-105A.

[10] **FULLY OPEN** the following Water Box Inlet Valves:

- MO-3871 (Water Box #4 Inlet Valve)
- MO-3873 (Water Box #2 Inlet Valve)

[11] **VERIFY** pump amperage drops (from an initial high starting amperage to a running amperage of about 150 amps).

CAUTION

Opening and/or closing of the Main Condenser Vapor Valves (AO-3703, AO-3704, AO-3710, and AO-3711) can affect dose rates and impact personnel exposure if work is taking place near any offgas process piping (Recombiner Room, Condenser Bay, and AOG 5' elevation).

[12] PRIOR to opening/closing any Main Condenser Vapor Valve (AO-3703, AO-3704, AO-3710, and/or AO-3711), **NOTIFY** Radiation Protection.

[13] **OPEN/VERIFY OPEN** the following Condenser Offgas Valves:

- AO-3703, CNDSR A WEST SIDE
- AO-3710, CNDSR A WEST SIDE
- AO-3704, CNDSR B EAST SIDE
- AO-3711, CNDSR B EAST SIDE

[14] **VERIFY** Intake Structure Supply Fans are running in accordance with PNPS 2.2.45:

- VEX-108A, Intake Structure Supply Fan "A"
- VEX-108B, Intake Structure Supply Fan "B"

[15] IF seawater temperature is less than 30°F OR IF conditions are forcing debris up against the traveling screens, DO NOT remove the Screenwash System from service.

[16] IF the conditions in Step 7.3.1[15] do not exist after approximately 15 minutes of operation, **SECURE** traveling screens C and D in accordance with Section 7.8.7 of this Procedure.

7.3.2 Recovery With Seawater Pump A Idle And Inlet Crossover Valve Open

[1] **VERIFY** the following valve lineup:

(a) MO-3873 WATER BOX #2 INL VLV, CLOSED

(b) MO-3871, WATER BOX #4 INL VLV, CLOSED.

(c) MO-3865, WEST CONDENSER INL XOVER, OPEN.

OR

MO-3875, EAST CONDENSER INL XOVER, OPEN.

(d) MO-3866, WEST CONDENSER OUTL XOVER, CLOSED.

(e) MO-3876, EAST CONDENSER OUTL XOVER, CLOSED.

(f) MO-3882, WATER BOX #1 OUTL VLV, OPEN.

(g) MO-3883, WATER BOX #2 OUTL VLV, OPEN.

(h) MO-3880, WATER BOX #3 OUTL VLV, OPEN.

(i) MO-3881, WATER BOX #4 OUTL VLV, OPEN.

[2] **CLOSE OR VERIFY CLOSED** INL XOVER, MO-3865 **AND** INL XOVER, MO-3875.

[3] **PLACE** the Screenwash System with screens C and D in service. (**SEE** Section 7.8.2.)

[4] **PARTIALLY OPEN** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3871 (Water Box #4 Inlet Valve)
- MO-3873 (Water Box #2 Inlet Valve)

[5] **WHEN** either Water Box Inlet Valve MO-3873 or MO-3871 indicates 12 to 18% OPEN, **THEN START** Seawater Pump A, P-105A.

[6] **FULLY OPEN** the following Water Box Inlet Valves:

- MO-3871 (Water Box #4 Inlet Valve)
- MO-3873 (Water Box #2 Inlet Valve)

[7] **VERIFY** pump amperage drops (from an initial high starting amperage to a running amperage of about 150 amps).

CAUTION

Opening and/or closing of the Main Condenser Vapor Valves (AO-3703, AO-3704, AO-3710, and AO-3711) can affect dose rates and impact personnel exposure if work is taking place near any offgas process piping (Recombiner Room, Condenser Bay, and AOG 5' elevation).

[8] **PRIOR** to opening/closing any Main Condenser Vapor Valve (AO-3703, AO-3704, AO-3710, and/or AO-3711), **NOTIFY** Radiation Protection.

[9] **OPEN OR VERIFY OPEN** the following Condenser Offgas Valves:

(a) AO-3703, CNDSR A WEST SIDE

(b) AO-3710, CNDSR A WEST SIDE

(c) AO-3704, CNDSR B EAST SIDE

(d) AO-3711, CNDSR B EAST SIDE

7.3.3 Recovery With Seawater Pump B Idle And Inlet Crossover Valves Closed

NOTE

Review Precaution 5.1[2] with regard to pump start limitations.

[1] **VERIFY** alarm **"SEAWATER PUMP B CLG WTR FLOW LO"** (C1R-D3) is CLEAR.

[2] **VERIFY** Seawater Pump B motor is warm (space heater operating).

[3] **PLACE** the Screenwash System with screens A and B in service (**SEE** Section 7.8.2).

[4] **OPEN/VERIFY OPEN** the following Water Box Outlet Valves:

- MO-3880 (Water Box #3 Outlet Valve)
- MO-3882 (Water Box #1 Outlet Valve)

[5] **CLOSE/VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3870 (Water Box #3 Inlet Valve)
- MO-3872 (Water Box #1 Inlet Valve)

[6] **MOMENTARILY OPEN** the following vent valves:

- AO-3842 (1-3 Condenser Vent Valve)
- AO-3844 (1-1 Condenser Vent Valve)

[7] **CLOSE** the following vent valves:

- AO-3842 (1-3 Condenser Vent Valve)
- AO-3844 (1-1 Condenser Vent Valve)

[8] **PARTIALLY OPEN** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3870 (Water Box #3 Inlet Valve)
- MO-3872 (Water Box #1 Inlet Valve)

[9] **WHEN** either Water Box Inlet Valve MO-3870 **OR** MO-3872 indicates 12 to 18% OPEN, **THEN START** Seawater Pump B, P-105B.

[10] **FULLY OPEN** the following Water Box Inlet Valves:

- MO-3870 (Water Box #3 Inlet Valve)
- MO-3872 (Water Box #1 Inlet Valve)

[11] **VERIFY** pump amperage drops (from an initial high starting amperage to a running amperage of about 150 amps).

CAUTION

Opening and/or closing of the Main Condenser Vapor Valves (AO-3703, AO-3704, AO-3710, and AO-3711) can affect dose rates and impact personnel exposure if work is taking place near any offgas process piping (Recombiner Room, Condenser Bay, and AOG 5' elevation).

[12] **PRIOR** to opening/closing any Main Condenser Vapor Valve (AO-3703, AO-3704, AO-3710, and/or AO-3711), **NOTIFY** Radiation Protection.

[13] **OPEN/VERIFY OPEN** the following Condenser Offgas Valves:

- AO-3703, CNDSR A WEST SIDE
- AO-3710, CNDSR A WEST SIDE
- AO-3704, CNDSR B EAST SIDE
- AO-3711, CNDSR B EAST SIDE

[14] **VERIFY** Intake Structure Supply Fans are running in accordance with PNPS 2.2.45:

- VEX-108A, Intake Structure Supply Fan "A"
- VEX-108B, Intake Structure Supply Fan "B"

[15] **IF** seawater temperature is less than 30°F **OR IF** conditions are forcing debris up against the traveling screens, **DO NOT** remove the Screenwash System from service.

[16] **IF** the conditions in Step 7.3.3[15] do not exist after approximately 15 minutes of operation, **SECURE** traveling screens A and B in accordance with Section 7.8.7 of this Procedure.

7.3.4 Recovery With Seawater Pump B Idle And Inlet Crossover Valve Open

[1] **VERIFY** the following valve lineup:

(a) MO-3872 WATER BOX #1 INL VLV, CLOSED

(b) MO-3870, WATER BOX #3 INL VLV, CLOSED.

(c) MO-3865, WEST CONDENSER INL XOVER, OPEN.

OR

MO-3875, EAST CONDENSER INL XOVER, OPEN.

(d) MO-3866, WEST CONDENSER OUTL XOVER, CLOSED.

(e) MO-3876, EAST CONDENSER OUTL XOVER, CLOSED.

(f) MO-3882, WATER BOX #1 OUTL VLV, OPEN.

(g) MO-3883, WATER BOX #2 OUTL VLV, OPEN.

(h) MO-3880, WATER BOX #3 OUTL VLV, OPEN.

(i) MO-3881, WATER BOX #4 OUTL VLV, OPEN.

[2] **CLOSE OR VERIFY CLOSED** INL XOVER, MO-3865 **AND** INL XOVER, MO-3875.

[3] **PLACE** the Screenwash System with screens A and B in service. (**SEE** Section 7.8.2.)

[4] **PARTIALLY OPEN** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3870 (Water Box #3 Inlet Valve)
- MO-3872 (Water Box #1 Inlet Valve)

[5] **WHEN** either Water Box Inlet Valve MO-3870 **OR** MO-3872 indicates 12 to 18% OPEN, **THEN START** Seawater Pump B, P-105B.

[6] **FULLY OPEN** the following Water Box Inlet Valves:

- MO-3870 (Water Box #3 Inlet Valve)
- MO-3872 (Water Box #1 Inlet Valve)

[7] **VERIFY** pump amperage drops (from an initial high starting amperage to a running amperage of 150 amps).

CAUTION

Opening and/or closing of the Main Condenser Vapor Valves (AO-3703, AO-3704, AO-3710, and AO-3711) can affect dose rates and impact personnel exposure if work is taking place near any offgas process piping (Recombiner Room, Condenser Bay, and AOG 5' elevation).

[8] **PRIOR** to opening/closing any Main Condenser Vapor Valve (AO-3703, AO-3704, AO-3710, and/or AO-3711), **NOTIFY** Radiation Protection.

[9] **OPEN OR VERIFY OPEN** the following Condenser Offgas Valves:

(a) AO-3703, CNDSR A WEST SIDE

(b) AO-3710, CNDSR A WEST SIDE

(c) AO-3704, CNDSR B EAST SIDE

(d) AO-3711, CNDSR B EAST SIDE

7.4 CONDENSER BACKWASH ALIGNMENTS AND PREREQUISITES

PERFORM Attachment 1 for Main Condenser Backwash Alignments and Prerequisites.

7.5 BACKWASHING OF THE MAIN CONDENSER

[1] **PERFORM** Attachment 2 for a Main Condenser Backwash (Backwash 'B', Backwash 'A').

[2] **PERFORM** Attachment 3 for a Main Condenser Backwash (Backwash 'A', Backwash 'B').

[3] **PERFORM** Attachment 4 for a Thermal Backwash of the Main Condenser (Backwash 'B', Thermal 'A', Thermal 'B').

[4] **PERFORM** Attachment 5 for a Thermal Backwash of the Main Condenser (Backwash 'A', Thermal 'B', Thermal 'A').

[5] **PERFORM** Attachment 6 for a Thermal Backwash of the Main Condenser (Thermal 'B', Thermal 'A').

[6] **PERFORM** Attachment 7 for a Thermal Backwash of the Main Condenser (Thermal 'A', Thermal 'B').

7.6 WATER BOX SCAVENGING SYSTEM

FRN98-01-109 for abandoning the Water Box Scavenging System has been partially implemented. The Scavenging Pump Supply Breakers B2241 and B2242 have been disconnected from the pumps and have been rewired to supply the K-117 Diesel Air Compressor auxiliaries in accordance with PDC02-50. In addition, the Scavenging Pump control switches at Panel C1 have been removed to allow installation of a control switch for the K-117 compressor.

7.7 SEAWATER PUMP BEARING LUBRICATION

7.7.1 Description

The Cutlass rubber bearings are continuously lubricated by filtered city water and there are two flow switches on the seal water line to each pump which alarm on low flow and are interlocked to the pump control serving as a pump start permissive. There is a triplex filter unit for filtering the bearing lube water. The common inlet to the filter unit is tied into city water as the primary supply, and into Loop A and Loop B of the SSW headers by two separate lines with isolating valves as the backup supply. The outlet header of the triplex filters divides into two lines, one going to each Seawater Pump. Normally the supply to the filter unit is valved from city water. The valves from the SSW loops are kept closed. FRN95-03-102 installed a permanent triplex filter bypass to allow city water to feed Seawater Pump lube water to facilitate maintenance on the triplex filter, if required.

The triplex filter unit consists of three filter elements. Each filter element has a hand operated outlet valve and air operated inlet and drain valves. The linkage is such that when the unit is open, the drain is closed and vice versa. The air supply to the air operator is through a solenoid valve. During a backwash the inlet is closed and the drain is opened, reversing the flow through the filter.

The backwash cycle can be triggered by 1) the time clock inside the panel box and 2) by momentarily putting the AUTO/MANUAL switch to "MANUAL". The switch is spring returned to "AUTO". The time clock can be set to start the backwash cycle from once every 1/4 hour to once every 24 hours in increments of 1/4 hours. The backwash cycle is for 2 minutes. Each filter is sequentially backwashed for 30 seconds at a time with a 10-second delay pause in between.

Each filter element can also be backwashed independent of the time clock and programmer by pressing the manual override button on the solenoid.

7.7.2 Operation

[1] **VERIFY** that the Salt Service Water System is in service in accordance with PNPS 2.2.32.

[2] **OPEN** the following:

(a) 29-HO-3899, Triplex Filter A1 Outlet Valve

(b) 29-HO-3902, Triplex Filter A2 Outlet Valve

(c) 29-HO-3905, Triplex Filter A3 Outlet Valve

[3] **VERIFY** that the air supply is valved into the filter units.

[4] **ENERGIZE** the filter control supply panel.

[5] **PLACE** city water supply to triplex filter in service by opening/verifying open 29-HO-3886, City Water Supply Block Valve To Triplex Filter.

[6] **MOMENTARILY PLACE** the control switch in "MANUAL".

[7] **VERIFY** the backwash cycle start.

[8] **VERIFY** that both the Seawater Pumps have lube water flow of 10 to 20 GPM (FI-3852A/FI-3852B for P-105A, FI-3862A/FI-3862B for P-105B).

NOTE

Temperature of motor bearings on P-105A and P-105B should be monitored when throttling manual flow control valves FCV-38024, FCV-38025, FCV-38026, and FCV-38027. (P&ID M211)

[9] **IF** lube water flow to Seawater Pumps is less than 10 GPM, **THEN ADJUST** FCV-38025 for P-105A and FCV-38027 for P-105B.

[10] **VERIFY** that motor cooling water flow is approximately 2 GPM as read on FI-3838 for P-105A and FI-3854 for P-105B.

[11] **IF** motor cooling water flow needs adjustment, **THEN ADJUST** FCV-38024 for P-105A and FCV-38026 for P-105B.

[12] **OBSERVE** the filter inlet and outlet pressures **AND ENSURE** that the differential pressure is not high.

[13] **IF** the differential pressure is high, **THEN INITIATE** another backwash cycle.

[14] **SET** the backwash cycle time clock to 4 hours by pulling out the appropriate tabs.

7.7.3 Isolating Individual Filter Elements for Changing Elements

NOTE

Each element requires three filters (PIL-20286) for change-out.

[1] **CLOSE** the triplex filter outlet valve of the selected element.

(a) Element A1: 29-HO-3899

(b) Element A2: 29-HO-3902

(c) Element A3: 29-HO-3905

[2] **DE-ENERGIZE** the filter control supply panel.

CAUTION

Never remove the cap of the filter with the control power supply switch in the "ON" position.

[3] **PUSH DOWNWARD** the manual override button on the solenoid (corresponding to the element to be removed) **AND TURN** it 180° to lock.

[4] **OPEN** the top cap of the filter to remove and replace the filter elements.

[5] **REPLACE** the filters and the top cover.

[6] **RELEASE** the manual override button on the solenoid.

[7] **OPEN** the outlet valve previously closed in Step [1].

[8] **RE-ENERGIZE** the filter control supply panel.

7.7.4 Isolating All Triplex Filters For Maintenance Activities

[1] **OPEN** 34-HO-262, Triplex Filter Bypass Valve for Seawater Pump Lube Water.

[2] **CLOSE** 29-HO-28, Seawater Pump P-105A Lube Water Supply Block Valve.

[3] **CLOSE** 29-HO-33, Seawater Pump P-105B Lube Water Supply Block Valve.

[4] **VERIFY** that the Seawater Pumps have lube water flow of 10 to 20 GPM (FI-3852A/FI-3852B for P-105A; FI-3862A/FI-3862B for P-105B).

[5] **CLOSE** the following valves:

- 29-HO-3899, Triple Filter A1 Outlet Valve
- 29-HO-3802, Triple Filter A2 Outlet Valve
- 29-HO-3805, Triple Filter A3 Outlet Valve

[6] **CLOSE** 29-HO-3886, City Water Supply Block Valve to Triplex Filters.

[7] **DE-ENERGIZE** the filter control supply panel.

7.7.5 Swapping Seawater Pump Lube Water Supply

[1] To swap Seawater Pump lube water from the city water supply to salt service water supply, **PERFORM** the following:

- **VERIFY** that the Salt Service Water System is in service.
- **OPEN** 29-HO-3882, SSW Loop "A" Supply Block Valve To Triplex Filters.
- **OPEN** 29-HO-3884, SSW Loop "B" Supply Block Valve To Triplex Filters.
- **CLOSE** 29-HO-3886, City Water Supply Block Valve To Triplex Filters.

[2] **VERIFY** that both the Seawater Pumps have lube water flow of 10 to 20 GPM (FI-3852A/FI-3852B for P-105A; FI-3862A/FI-3862B for P-105B).

[3] To swap Seawater Pump lube water from salt service water supply to city water supply, **PERFORM** the following:

- **OPEN** 29-HO-3886, City Water Supply Block Valve To Triplex Filters.
- **CLOSE** 29-HO-3882, SSW Loop "A" Supply Block Valve To Triplex Filters.
- **CLOSE** 29-HO-3884, SSW Loop "B" Supply Block Valve To Triplex Filters.
- **VERIFY** that both the Seawater Pumps have lube water flow of 10 to 20 GPM (FI-3852A/FI-3852B for P-105A; FI-3862A/FI-3862B for P-105B).

7.8 TRAVELING SCREENS AND SCREENWASH SYSTEM

CAUTION

Any time that the seawater temperature is less than 30°F, the traveling screens will be turned continuously.

Any time that storm conditions are forcing debris up against the traveling screens, the traveling screens will be turned continuously.

7.8.1 Description

The traveling screens are provided to retain particles of 3/8" and larger and provide clean seawater to the Seawater Pumps. There are four traveling screens, two for each Seawater Pump. The screens can be operated in forward and reverse directions by turning the control switches to "FORWARD" or "REVERSE". The screens have two speed motors with control switches for SLOW (5 FPM) and FAST (20 FPM) operation. When changing speeds from FAST to SLOW, there is a 7-second time delay between speed changes. The debris collected on the screens is removed by the Screenwash System and routed with the screenwash spray to either the east or west sluiceways. The sluiceway on the east side of the Screenhouse discharges to ambient water temperature in the intake embayment. The west sluiceway discharges to the discharge canal and has a trash pit/basket for collecting debris. Operational control of the sluiceways is by the use of two baffle plates, one at each end of the screen housings.

At various times, heavy traveling screen loading may occur due to high seas or excessive waterborne debris. As such, there may be times when it becomes necessary to reset traveling screen thermal overloads. One reset is located at each breaker at the associated MCC. An additional two resets (per screen) are located at each traveling screen fast/slow speed control panel.

The screens normally require a "screenwash water pressure permissive" to allow rotation. Individual keylock traveling screenwash water pressure interlock bypass switches are provided for heavy debris conditions, screenwash requiring use of the fire system, or spray-free movement during minor preventive/corrective maintenance.

There are two Screenwash Pumps connected to a common header from which four lines take off, one for each screen. Each of these lines supplies two spray headers on each screen. The lower header is a low pressure (LP) spray header which provides a relatively gentle wash to dislodge light fouling and organisms. The upper header is a high pressure (HP) spray header which is effective in washing off heavy fouling. As the traveling screen rotates in the normal direction (forward), the LP spray hits each panel, then the HP spray removes any fouling not removed by the LP spray. The combined HP and LP spray flow enters the sluiceway and normally discharges out the east side to the intake embayment. Each LP spray header is a branch from the respective HP supply line with an isolation valve, Y-strainer, and pressure indicator upstream of the spray nozzles.

When backwashing the Condenser, the baffle plates in the sluiceway are repositioned so that the discharge is routed to the discharge canal.

NOTES

1. An event recorder located in the Screenwash Pump A Room marks the time and duration of operation of the four screens, both Screenwash Pumps, and both Dechlorination Pumps, and is used to verify compliance with an EPA requirement to dechlorinate the screenwash water.

2. Refer to Section 4.5 for screenwash operations.

7.8.2 Normal Operation

[1] **VERIFY** that the Salt Service Water Pumps are operating in accordance with PNPS 2.2.32.

CAUTIONS

- When one Screenwash Pump is running, only two screens should be operated. This will help prevent possible Screenwash Pump runout condition and provide for most efficient use of screenwash system.
- When operating all four screens simultaneously, both A and B Screenwash Pumps SHOULD be running.
- When two Screenwash Pumps are running, a minimum of three screens should be operated (valves open). This will avoid overpressurizing the screenwash piping.
- If it is necessary to operate all four screens together and only one Screenwash Pump is available, then the inlet valves should be throttled as necessary.
- Prior to the start of Screenwash Pump P-213A and/or P-213B, close or verify closed Root Valves 28-HO-110A through D (root valves for PI-3904A through D).
- After Screenwash Pump P-213A and/or P-213B have been started, Root Valves 28-HO-110A through D can be opened as necessary to obtain pressure readings to the appropriate traveling screens in use.

[2] **OPEN/VERIFY OPEN** the inlet valve to the particular screen selected for wash:

(a) Screen X-108A: 28-HO-102A

(b) Screen X-108B; 28-HO-102B

(c) Screen X-108C; 28-HO-102C

(d) Screen X-108D; 28-HO-102D

[3] **VERIFY** that if the SSW Hypochlorination System is operating, the Dechlorination System is aligned for automatic as discussed in PNPS 2.2.95.

- **ENSURE** SSW Hypochlorination System status changes are logged in the CRS logbook.
- **ENSURE** Chemistry is notified of SSW Hypochlorination System status changes.

NOTES

1. The traveling screenwash water pressure interlocks may be bypassed with permission from the SM. Keylock bypass switches require keys CR163, CR164, CR165, and CR166.
2. Plexiglass covers for the traveling screens should be maintained closed during traveling screen operation.

[4] **VERIFY** that all keylock traveling screenwash water pressure interlock bypass switches are in the "NORMAL" position.

[5] **START** Screenwash Pump A and/or B by its control switch mounted on the wall near the pump **AND OPEN** discharge valves 28-HO-101A and/or 28-HO-101B for running pumps.

[6] **TURN** the control switch mounted on the wall near the screen(s) to "FORWARD".

[7] **VERIFY** that screen(s) starts as soon as water starts spraying through nozzles (red light illuminates for screen start).

NOTES

1. If more screens are operated, then the second screenwash pump may have to be started.
2. If screenwash spray nozzles are not spraying an overlapping pattern with sufficient pressure to properly remove debris from screens, then notify the SM.

[8] **VERIFY** that the screens are rotating properly **AND WATCH** for any damaged screens.

[9] **CONTINUOUSLY OPERATE** all the screens when heavy fouling is noted.

[10] During traveling screens operation, **PERIODICALLY CHECK** (minimum every 4 hours) the following for evidence of oil leakage:

- During hours of adequate sunlight, **OBSERVE** discharge canal for oil sheens
- Traveling screen gear boxes and chain enclosures

[11] **IF** the Screenwash System is in operation for greater than 4 hours, **THEN MONITOR** the Dechlorination System at least every 4 hours for the following:

- **CHECK** FI-3947A/FI-3947B for flow indication (ball float is deflecting).
- **PERFORM** a visual examination of the operating Dechlorination Pumps P-175A/P-175B piping and tubing. **LOOK** for signs of system leakage (i.e., compression fittings) **AND OTHERWISE VERIFY** normal operation.
- Greater than one-quarter level in the sodium thiosulfate drum being used.
- **CHECK** PI-3986/PI-3987 to ensure adequate pump discharge pressure.
- Visual examination of dechlorination tubing; **LOOK** for any leaks (i.e., compression fittings and valves).

[12] **IF** the level in the sodium thiosulfate drum is less than one-quarter by visual inspection, **THEN CONTACT** the Chemistry Lab **AND COORDINATE** drum replacement by performing the following:

(a) **SECURE** the affected dechlorination pump.

(b) **CAREFULLY REMOVE** the suction flexible tubing from the used sodium thiosulfate drum.

(c) **POSITION** the suction flexible tubing to a full sodium thiosulfate drum.

(d) **INSTALL** the suction flexible tubing inside the new drum.

(e) **START** the affected pump **AND**, **IF** required, **PRIME** the pump in accordance with applicable steps of PNPS 2.2.95 Section 7.3.1.

[13] **IF** oil is leaking into the discharge canal, **THEN IMMEDIATELY NOTIFY** the SM. Entry into PNPS 1.3.22, *"Oil Spill Prevention Control and Countermeasure Plan"*, is required.

[14] IF the duplex basket strainers exceed differential pressure of 10 psid, THEN CHANGE OVER to the clean basket by performing the following:

NOTE
Arrow points to basket ready for cleaning (NOT in service).

(a) **TURN** handwheel so arrow points to the basket to be cleaned. (Valves are now closed to this basket.)

CAUTION
Opposite basket under pressure. **DO NOT RELEASE** cover bolts.

(b) **OPEN** bottom drain, THEN **OPEN** air vent on top of basket well.

(c) AFTER relieving pressure, **RELEASE** cover bolts AND **LIFT** cover.

(d) **REMOVE** basket AND **CLEAN** the dirty basket. **AVOID** striking basket to loosen contents.

(e) **REMOVE** debris from the bottom of strainer; this material could plug spray nozzles.

(f) **EXAMINE** AND **REPLACE** worn or damaged cover O-ring and basket gasket.

(g) **REPLACE** clean basket AND **PRESS DOWN** to ensure a tight seal.

(h) **CLOSE** cover AND **TIGHTEN** cover bolts.

(i) **CLOSE** bottom drain AND **CLOSE** air vent on top of basket well.

(j) To divert flow back through the basket just cleaned, **TURN** handwheel to opposite basket to open valves.

7.8.3 Operation During Condenser Backwash

[1] **START** the Screenwash System as usual using HP nozzle supply. **SHIFT** gate so sluiceway discharges to discharge canal.

NOTES

1. Plexiglass covers for the traveling screens should be maintained closed during traveling screen operation.

2. At various times, heavy traveling screen loading may occur due to high seas or excessive waterborne debris. As such, there may be times when it becomes necessary to reset traveling screen thermal overloads. One reset is located at each breaker at the associated MCC. An additional two resets (per screen) are located at each traveling screen fast/slow speed control panel.

[2] **OPERATE** the screens connected with the water boxes to be backwashed in the reverse direction by placing their control switches to "REVERSE" in accordance with direction of the Control Room Operator.

[3] **OPERATE** the screens of the operating Seawater Pump in FORWARD direction.

7.8.4 Screenwash Sluiceway Operation

7.8.4.1 East Sluiceway Operation (Normal Screenwashing)

[1] **INSERT** baffle plate at west end of Traveling Screen X-108A.

[2] **REMOVE** baffle plate at east end of Traveling Screen X-108D.

7.8.4.2 West Sluiceway Operation (Backwash)

[1] **INSERT** baffle plate at east end of Traveling Screen X-108D.

[2] **REMOVE** baffle plate at west end of Traveling Screen X-108A.

7.8.4.3 East/West Sluiceway Operation During Fire System Supplied Screenwash

REMOVE both baffle plates at east end of Traveling Screen X-108D and at west end of Traveling Screen X-108A.

7.8.5 Blowdown of LP Spray Header Strainer

NOTE

This should be performed if a reduced flow rate is observed downstream of the Y-strainer or as when scheduled on the MSTP.

REFER TO Attachment 14 for blowdown instructions.

7.8.6 Blowdown of the HP and LP Spray Headers

NOTE

This should be performed if reduced flow in spray nozzle(s) is observed or when scheduled on the MSTP.

REFER TO Attachment 14 for blowdown instructions.

7.8.7 Normal Shutdown of the Screenwash System

[1] **SECURE** the Traveling Screens by placing the control switch mounted on the wall near the screen(s) to "OFF".

- Traveling Screen X-108A
- Traveling Screen X-108B
- Traveling Screen X-108C
- Traveling Screen X-108D

[2] **STOP** the Screenwash Pump(s) by placing the control switch mounted on the wall near the pump(s) to "OFF".

- Screenwash Pump A, P-213A
- Screenwash Pump B, P-213B

[3] **CLOSE** the Screenwash Pump discharge valve(s).

- 28-HO-101A, Screenwash Pump A, P-213A Discharge Block Valve
- 28-HO-101B, Screenwash Pump A, P-213B Discharge Block Valve

[4] IF placed in the "BYPASS" position, THEN **VERIFY** that the keylock traveling screenwash water pressure interlock bypass switches are returned to the "NORMAL" position and keys are returned to the Control Room for each traveling screen.

- Traveling Screen X-108A
- Traveling Screen X-108B
- Traveling Screen X-108C
- Traveling Screen X-108D

[5] **CLOSE** root valves for PI-3904A through D:

- 28-HO-110A
- 28-HO-110B
- 28-HO-110C
- 28-HO-110D

7.8.8 Operation of Traveling Screens During Severe Weather Conditions Or As Directed By The Shift Manager (SM)

NOTES

1. The traveling screenwash water pressure interlocks may be bypassed with permission from the SM. Keylock bypass switches require keys CR163, CR164, CR165, and CR166.
2. At various times, heavy traveling screen loading may occur due to high seas or excessive waterborne debris. As such, there may be times when it becomes necessary to reset traveling screen thermal overloads. One reset is located at each breaker at the associated MCC. An additional two resets (per screen) are located at each traveling screen fast/slow speed control panel.
3. The balanced drive (no notch) shear pins should be used only when the normal drive (notched) shear pins continue to shear. Do not substitute any other pin, bolt, etc., to replace shear pins as damage to screens may result. (Refer to Attachment 1 of PNPS 2.1.37.)
4. The following steps may be performed in any order at the discretion of the SM.

[1] Replacing shear pins:

(a) **REQUEST** the Control Room to issue the "STAGED" eSOMS traveling screen tagout(s). The "STAGED" tagouts for the traveling screens are located in the "STAGED TAGOUT" clearance area of eSOMS.

(b) **TURN** screen C/S to "OFF" AND **ISOLATE** in accordance with the tagout.

(c) **REPLACE** shear pin.

(d) **OBTAIN** on-shift SRO permission to clear tagout.

(e) **CLEAR** tagout **AND RETURN** the screen to service.

(f) **IF** placed in the "BYPASS" position, **THEN VERIFY** that all the keylock traveling screenwash water pressure interlock bypass switches are returned to the "NORMAL" position and keys are returned to the SM.

[2] Using Fire System Supplied Screenwash

CAUTION

Refer to FSAR Section 10.8.4.2, Fire Water Supply System. Entering this system configuration will result in an active LCO condition.

(a) As required, **BYPASS** the screenwash water pressure interlocks using keylock bypass switch keys CR163, CR164, CR165, and CR166.

(b) **NOTIFY** Fire Protection as soon as possible that the Fire Water System will be utilized for screenwash.

(c) **ENSURE** that Fire Water Storage Tank makeup valves AO-4677 and AO-4678 are in AUTO and that the Fire Water Storage Tanks are full.

(d) **MAINTAIN** an Operator available to discontinue Fire System supplied screenwash if any of the following conditions occur:

- In the event of a fire or valid fire alarm.
- **"FIRE WATER STOR TANKS LEVEL LO"** (C7R-A7) alarm.
- **"DIESEL FIRE PUMP TROUBLE"** (C7R-B5) alarm (until evaluated by SM).
- **"ELECTRIC FIRE PUMP TROUBLE"** (C7R-B6) alarm (until evaluated by SM).

(e) **VERIFY** the following valves are CLOSED:

- 10-P-140, Diesel Fire Pump to Fire Pump Hose Header Block Valve
- 10-P-141, Electric Fire Pump to Fire Pump Hose Header Block Valve
- 10-P-142, Fire Pump Hose Header Shutoff Valve
- 6-P-143, Fire Pumps Test Return Line to FWST A Block Valve
- 6-P-153, Fire System Supplied Screenwash Header Block Valve

(f) **OPEN** the following valves as required:

- 3-P-154, Fire System Supply to Traveling Screen A Spray Valve
- 3-P-155, Fire System Supply to Traveling Screen B Spray Valve
- 3-P-156, Fire System Supply to Traveling Screen C Spray Valve
- 3-P-157, Fire System Supply to Traveling Screen D Spray Valve

(g) **VERIFY** both east and west sluiceway baffle plates have been removed.

(h) **IF** local start is used, **PLACE** electric fire pump auto timer switch to "MANUAL".

(i) **START** the electric fire pump from Panel C7 (preferred) **OR** locally at Panel C42.

(j) **SLOWLY OPEN** 10-P-141, Electric Fire Pump to Fire Pump Hose Header Block Valve.

(k) **SLOWLY OPEN** 6-P-153, Fire System Supplied Screenwash Header Block Valve.

(l) **PLACE** Jockey Fire Pump control switch to "OFF".

(m) At the discretion of the SM **OR** in the event of an electric fire pump failure, the diesel fire pump can be started and valve 10-P-140 opened to supply system flow and pressure.

(n) **WHEN** the Fire System supplied screenwash is no longer required, **THEN CLOSE** valve 6-P-153 **AND RESTORE** system to normal configuration (valves closed and all switches returned to AUTO - **REFER TO** PNPS 2.2.25).

(o) **IF** placed in the "BYPASS" position, **THEN VERIFY** that all the keylock traveling screenwash water pressure interlock bypass switches are returned to the "NORMAL" positon and keys are returned to the SM.

(p) **NOTIFY** the CRS of system restoration.

[3] Removing debris from traveling screens while screens are rotating:

NOTE

To ensure personal safety while manually cleaning screens, only the following practices are acceptable.

(a) Single Operator may pick stationary screens only.

(b) Operator may pick rotating screens only when a second person is present to de-energize them in an emergency. (Two persons may pick ADJACENT screens simultaneously, each serving as a "safety man" for each other.)

[4] Use of fire hoses to clean screens:

(a) IF fire hoses become necessary to clean screens, **REMOVE** front screen covers **AND STORE** them in a safe place.

(b) **RUN OUT** fire hoses in an orderly manner **AND COMMENCE SPRAYING** screens.

7.8.9 Operation of Traveling Screens During Maintenance Activities

[1] **NOTIFY** Control Room **AND OBTAIN** SM/CRS permission

NOTES

1. The traveling screenwash water pressure interlocks may be bypassed with permission from the SM. Keylock bypass switches require keys CR163, CR164, CR165, and CR166.
2. Steps (a), (b), and (c) may be performed in any order.

(a) **ROTATE/INSPECT** screen.

(b) **PERFORM** maintenance on selected screens while inspecting and preventing carryover of debris.

(c) **RESTORE** system to normal configuration.

(d) IF placed in the "BYPASS" position, **THEN VERIFY** that all the keylock traveling screenwash water pressure interlock bypass switches are returned to the "NORMAL" position and keys are returned to the SM.

(e) **NOTIFY** the CRS of system restoration.

7.9 DEWATERING AND REFILLING SEAWATER PUMP BAYS AND/OR CONDENSER INLET TUNNELS

NOTE

It may be necessary to dewater either of the Seawater Pump bays or Condenser inlet tunnels for inspection and maintenance. They must be filled with water before starting the associated Seawater Pump. This section explains the dewatering and refilling operations.

Sections 7.9.1 and 7.9.2 need not be performed in tandem. The Condenser inlet tunnel(s) may be dewatered before the Seawater Pump bays and either area may be dewatered alone, leaving others flooded.

7.9.1 Dewatering Seawater Pump Bay(s)

[1] **STOP** the Seawater Pump, P-105A (P-105B), connected with the Seawater Pump bay to be dewatered; **RACK OUT AND TAG** the breaker.

[2] **USE** position indicator **AND VERIFY OPEN OR OPEN** the rear SSW sluice gate (X-367C).

CAUTION

Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank

[3] **CLOSE** SSW sluice gate on the Seawater Pump bay being dewatered. However, if inspection and repair of the SSW bay is being considered, the associated SSW Pump may be removed from service, the rear SSW sluice gate (X-367C) closed, and the SSW bay sluice gate positioned open.

[4] **CLOSE** Condenser water box inlet valves from that particular pump **AND OPEN AND TAG** their breakers.

- Pump A: WATER BOX #4 INL VLV, MO-3871 **AND** WATER BOX #2 INL VLV, MO-3873
- Pump B: WATER BOX #3 INL VLV, MO-3870 **AND** WATER BOX #1 INL VLV, MO-3872

NOTE

It may be necessary to remove the horseshoe crab barrier and/or debris prior to installing the stop logs. A diver inspection should be performed to verify stop log guide installation.

[5] With crane and RP available, **POSITION** stop logs into guides outboard of traveling screens: A and B for Seawater Pump B, and C and D for Seawater Pump A.

CAUTION

Caution should be taken when using all access ladders to lower levels of the Intake Structure due to their condition. Some have been removed. Entrance should be made using safety harness and hoisting device.

[6] **PRIOR** to dewatering either seawater intake bay, **MAKE** an inspection of the W14 wall braces. The location of these braces is shown on drawing C44.

NOTE

The following inspection shall include the grout at the brace ends and the braces themselves, which are located between the trash racks and traveling screen.

The grout should be sound without large or extensive cracking or large voids. The braces should not have excessive corrosion or deformations. Any loose or fallen steel or grout parts should be brought to Mechanical/Civil/Structural Engineering for evaluations.

[7] **PLACE** a portable pump in the isolated Seawater Pump bay to be dewatered. **DISCHARGE** to either outboard of the stop logs (intake area) or to discharge canal.

[8] **AFTER** refilling Seawater Pump bay(s), **REMOVE** stop log(s).

7.9.2 Dewatering Condenser Inlet Tunnel A (B)

[1] **STOP** the Seawater Pump, P-105A (P-105B), connected with the inlet tunnel to be dewatered; **RACK OUT AND TAG** the breaker.

[2] **CLOSE** Condenser water box inlet valves from the tunnel to be dewatered **AND OPEN AND TAG** their breakers.

- Pump A: WATER BOX #4 INL VLV, MO-3871 **AND** WATER BOX #2 INL VLV, MO-3873
- Pump B: WATER BOX #3 INL VLV, MO-3870 **AND** WATER BOX #1 INL VLV, MO-3872

[3] **REMOVE** the vent cap **AND OPEN** 27-HO-58A (27-HO-58B) Condenser Inlet Tunnel Vent Valve, at the manhole cover of the selected inlet tunnel at front entrance to the Executive Building.

[4] **UNBOLT AND REMOVE** the manhole cover using hoisting device.

[5] **PLACE** a portable pump in selected inlet tunnel **AND PUMP OUT** the water with the discharge going to a storm drain or to the discharge canal.

7.9.3 Sequence for Refilling the "A" Condenser Inlet Tunnel with "B" Seawater Pump

NOTES

1. Verify that the manhole cover has been installed and tightened.
2. Prior to startup of the "A" CW Pump, the "A" tunnel should be refilled in order to prevent potential damage to the Condenser once the CWS is returned to operation.
3. Operators manually positioning the 1-1, 1-2 and 1-3, 1-4 inlet crossover valves shall be in communication with the Control Room (via the page) and with the personnel monitoring the water level in the "A tunnel (using walkie-talkies).

CAUTION

If any problems are encountered during the filling process, secure the in-service Seawater Pump to prevent overpressurization.

[1] IF not already open, **OPEN** 27-HO-58A, Condenser Inlet Tunnel "A" Vent Valve, on the manhole cover for the "A" inlet tunnel.

[2] With the "B" CW (Seawater) Pump supplying the 1-1 and 1-3 Water Boxes, **OPEN** the 1-2 (MO-3873) and 1-4 (MO-3871) inlet butterfly valves and the 1-2 (MO-3883) and 1-4 (MO-3881) outlet butterfly valves to allow any water in the water boxes to drain slowly to either the "A" inlet tunnel or the discharge tunnel.

CAUTION

Monitor the motor amperage of the "B" Seawater Pump during the filling process. The anticipated change in amperage is not expected to exceed 5 amps; but in any case, do not allow pump amperage to go below 140 amps or above 180 amps.

[3] **SLOWLY REFILL** the "A" inlet tunnel by manually cracking open the 1-1/1-2 (MO-3865) and 1-3/1-4 (MO-3875) inlet crossover valves. As the tunnel slowly fills, air will be vented through the vent valve on the manhole cover for the "A" tunnel and the 6-inch "A" CW Pump discharge air vent valve.

[4] **VERIFY** that the tunnel is filled to the proper level by inserting a water level sensor through the vent valve on the manhole cover for the "A" tunnel. **WHEN** water level is approximately 12.5 ft below the level of the manway cover, the tunnel is filled to the level expected when the "A" CW Pump is not operating. Excess water will drain through the CW Pump to the Seawater Pump bay.

[5] **FULLY CLOSE** the 1-1/1-2 (MO-3865) and 1-3/1-4 (MO-3875) inlet crossover valves.

[6] **CLOSE** 27-HO-58A, Condenser Inlet Tunnel "A" Vent Valve, on the "A" inlet tunnel **AND INSTALL** cap.

[7] The "A" CW Pump is now ready to be started in the normal fashion.

7.9.4 Sequence for Refilling the "B" Condenser Inlet Tunnel with "A" Seawater Pump

NOTES

1. Verify that the manhole cover has been installed and tightened.
2. Prior to startup of the "B" CW Pump, the "B" tunnel should be refilled in order to prevent potential damage to the Condenser once the CWS is returned to operation.
3. Operators manually positioning the 1-1, 1-2 and the 1-3, 1-4 inlet crossover valves shall be in communication with the Control Room (via the page) and with the personnel monitoring the water level in the "B" tunnel (using walkie-talkies).

CAUTION

If any problems are encountered during the filling process, secure the in-service Seawater Pump to prevent overpressurization.

[1] **IF** not already open, **OPEN** 27-HO-58B, Condenser Inlet Tunnel "B" Vent Valve, on the manhole cover for the "B" inlet tunnel.

[2] With the "A" CW (Seawater) Pump supplying the 1-2 and 1-4 Water Boxes, **OPEN** the 1-1 (MO-3872) and 1-3 (MO-3870) inlet butterfly valves and the 1-1 (MO-3882) and 1-3 (MO-3880) outlet butterfly valves to allow any water in the water boxes to drain slowly to either the "B" inlet tunnel or the discharge tunnel.

CAUTION

Monitor the motor amperage of the "A" Seawater Pump during the filling process. The anticipated change in amperage is not expected to exceed 5 amps; but in any case, do not allow pump amperage to go below 140 amps or above 180 amps.

[3] **SLOWLY REFILL** the "B" inlet tunnel by manually cracking open the 1-1/1-2 (MO-3865) and 1-3/1-4 (MO-3875) inlet crossover valves. As the tunnel slowly fills, air will be vented through the vent valve on the manhole cover for the "B" inlet tunnel and the 6-inch "B" CW Pump discharge air vent valve.

[4] **VERIFY** that the tunnel is filled to the proper level by inserting a water level sensor through the vent valve on the manhole cover for the "B" tunnel. **WHEN** water level is approximately 12.5 ft below the level of the manhole cover, the tunnel is filled to the level expected when the "B" CW Pump is not operating. Excess water will drain through the "B" CW Pump to the intake.

[5] **FULLY CLOSE** the 1-1/1-2 (MO-3865) and 1-3/1-4 (MO-3875) inlet crossover valves.

[6] **CLOSE** 27-HO-58B, Condenser Inlet Tunnel "B" Vent Valve, on the "B" inlet tunnel **AND INSTALL** cap.

[7] The "B" CW Pump is now ready to be started in the normal fashion.

7.9.5 Sequence for Refilling the "A" ("B") Condenser Inlet Tunnel Without Operating Seawater Pump

[1] **VERIFY** that the manhole cover for "A" ("B") inlet tunnel (at front of Executive Building) has been removed.

[2] **SET UP** submersible pump outboard of traveling screens **AND RUN** hose to "A" ("B") open manway.

[3] **COMMENCE FILLING** in this manner until the "Portable Water Level Sensor" placed in manway indicates level at approximately 12.5 ft below the level of the manway cover. This is the normal level with the Seawater Pump shutdown.

NOTE

Tunnel cannot be overfilled since, at the level indicated, excess water drains back through Seawater Pump.

[4] **REMOVE** "Portable Water Level Sensor".

[5] **PLACE** manhole cover in position **AND BOLT** in place.

[6] The "A" ("B") Seawater Pump is now ready to be started in the normal fashion.

7.10 PLUGGING OF CONDENSER TUBE LEAK OR OTHER MAINTENANCE OF WATER BOX DURING OPERATION

7.10.1 Isolation

CAUTION

Single pump operation at too high of a Reactor power level can cause Main Condenser differential temperatures to exceed the EPA limit of 32°F or Main Condenser vacuum to degrade.

[1] **REDUCE** Reactor power to approximately 50% in accordance with PNPS 2.1.14, *"Station Power Changes"*, while constantly monitoring Main Condenser vacuum and differential temperatures.

NOTES

1. Determination of a tube leak may be made by:
   - Checking CONDENSER CONDUCTIVITY SEA WATER PUMP B and A Recorders CRU-3310 and CRU-3360 on Panel C1.
   - CONDENSATE DEMINERALIZER INLET HEADER CONDUCTIVITY Recorder CR-3361 on Panel C1.
   - CONDENSATE PUMP SUCTION CONDUCTIVITY Recorder CRU-E1 on Panel C904.
   - DEMIN CONDUCTIVITY Recorder CRU-E2 on Panel C904.
2. Refer to Section 7.10.2 for Turbine limitations.

CAUTION

Opening and/or closing of the Main Condenser Vapor Valves (AO-3703, AO-3704, AO-3710, and AO-3711) can affect dose rates and impact personnel exposure if work is taking place near any offgas process piping (Recombiner Room, Condenser Bay, and AOG 5' elevation).

[2] PRIOR to opening/closing any Main Condenser Vapor Valve (AO-3703, AO-3704, AO-3710, and/or AO-3711), **NOTIFY** Radiation Protection.

[3] For maintenance in the 1-2 Condenser, **PERFORM** the following:

(a) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711

NOTE

Steps [3](b) and [3](c) must be performed together.

(b) **PARTIALLY CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3871 (Water Box #4 Inlet Valve)
- MO-3873 (Water Box #2 Inlet Valve)

(c) **WHEN** the first white light 12 to 18% OPEN position) comes on in Step [3](b), **THEN STOP** Seawater A, P-105A.

(d) **FULLY CLOSE** the following Water Box Inlet Valve:

- MO-3871 (Water Box #4 Inlet Valve)

NOTES

1. Refer to Precautions and Limitations Step 5.1[4] for recommended compensatory measures associated with 3-water box operation.
2. For optimum vacuum, the preferred alignment for establishing additional quadrant flow is via opening INL XOVER, MO-3875 (Crossover Valve for the 1-3 and 1-4 Inlet Water Box).
3. Prior to initiating 3-water box operation, consideration should be given to the following plant conditions:
   - Main Condenser vacuum (may degrade during 3-water box operation).
   - Intake Seawater temperature (a major factor on Condenser vacuum).
   - Duration of time in 3-water box operation (maneuvers in and out of 3-water box operation can be considered high risk maneuvers).

(e) **IF** 3-water box operation is desired, **THEN PERFORM** Steps [3](f) and [3](k) in sequence. **IF** 3-water box operation is NOT desired, **THEN OMIT** Steps [3](f) and [3](k).

(f) **OPEN** Inlet Crossover Valve MO-3875 INL XOVER (1-3 and 1-4 Inlet Water Boxes).

(g) **CLOSE/VERIFY CLOSED** the following Scavenger System Valves:

- 27-HO-23,Scavenger Line Cond 1-2 Inlet Water Box Block Valve
- 27-HO-44, Scavenger Line Cond 1-2 Outlet Water Box Block Valve

(h) **OPEN** the following Scavenger System Valves:

- 27-HO-22, Scavenger Line from Cond 1-2 Inlet Water Box Vent Vlv
- 27-HO-43 Scavenger Line from Cond 1-2 Outlet Water Box Vent Vlv

(i) **AFTER** the Condenser quadrant has drained, **CLOSE** MO-3883 WATER BOX #2 OUTL VLV (Seawater Outlet from 1-2 Condenser).

(j) **FULLY CLOSE** the following Water Box Inlet Valve:

- MO-3873 (Water Box #2 Inlet Valve)

(k) Once the circulating water outlet temperature indicates cooling has been re-established in cross-connected 1-4 Condenser, **OPEN** AO-3711, Cndsr B East Side Off Gas Valve SV-3711.

[4] For maintenance in the 1-4 Condenser, **PERFORM** the following:

(a) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711

NOTE

Steps [4](b) and [4](c) must be performed together.

(b) **PARTIALLY CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3871 (Water Box #4 Inlet Valve)
- MO-3873 (Water Box #2 Inlet Valve)

(c) **WHEN** the first white light (12 to 18% OPEN position) comes on in Step [4](b), **THEN STOP** Seawater Pump A, P-105A.

(d) **FULLY CLOSE** the following Water Box Inlet Valve:

- MO-3873 (Water Box #2 Inlet Valve).

NOTES

1. Refer to Precautions and Limitations Step 5.1[4] for recommended compensatory measures associated with 3-water box operation.
2. For optimum vacuum, the preferred alignment for establishing additional quadrant flow is via opening INL XOVER, MO-3875 (Crossover Valve for the 1-3 and 1-4 Inlet Water Box).
3. Prior to initiating 3-water box operation, consideration should be given to the following plant conditions:
   - Main Condenser vacuum (may degrade during 3-water box operation).
   - Intake Seawater temperature (a major factor on Condenser vacuum).
   - Duration of time in 3-water box operation (maneuvers in and out of 3-water box operation can be considered high risk maneuvers).

(e) IF 3-water box operation is desired, THEN **PERFORM** Steps [4](f) and [4](k) in sequence. IF 3-water box operation is NOT desired, THEN **OMIT** Steps [4](f) and [4](k).

(f) **OPEN** Inlet Crossover Valve MO-3865 , INL XOVER (1-1 and 1-2 Inlet Water Boxes).

(g) **CLOSE/VERIFY CLOSED** the following Scavenger System Valves:

- 27-HO-27, Scavenger Line from Cond 1-4 Inlet Water Box Block Vlv
- 27-HO-48,Scavenger Line from Cond 1-4 Outlet Water Box Block Vlv

(h) **OPEN** the following Scavenger System valves:

- 27-HO-26,Scavenger Line from Cond 1-4 Inlet Water Box Vent Vlv
- 27-HO-47,Scavenger Line from Cond 1-4 Outlet Water Box Vent Vlv

(i) AFTER the Condenser quadrant has drained, **CLOSE** MO-3881, WATER BOX #4 OUTL VLV (Seawater Outlet from 1-4 Condenser).

(j) **FULLY CLOSE** the following Water Box Inlet Valve:

- MO-3871 (Water Box #4 Inlet Valve)

(k) Once the circulating water outlet temperature indicates cooling has been re-established in cross-connected 1-2 Condenser, **OPEN** AO-3703, Cndsr A West Side Off Gas Valve SV-3703.

[5] For maintenance in the 1-1 Condenser, **PERFORM** the following:

(a) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704

NOTE

Steps [5](b) and [5](c) must be performed together.

(b) **PARTIALLY CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3870 (Water Box #3 Inlet Valve)
- MO-3872 (Water Box #1 Inlet Valve)

(c) **WHEN** the first white light (12 to 18% OPEN position) comes on in Step [5](b), **THEN STOP** Seawater Pump B, P-105B.

(d) **FULLY CLOSE** the following Water Box Inlet Valves:

- MO-3870 (Water Box #3 Inlet Valve)

NOTES

1. Refer to Precautions and Limitations Step 5.1[4] for recommended compensatory measures associated with 3-water box operation.
2. For optimum vacuum, the preferred alignment for establishing additional quadrant flow is via opening INL XOVER, MO-3875 (Crossover Valve for the 1-3 and 1-4 Inlet Water Box).
3. Prior to initiating 3-water box operation, consideration should be given to the following plant conditions:
   - Main Condenser vacuum (may degrade during 3-water box operation).
   - Intake Seawater Temperature (a major factor on Condenser vacuum).
   - Duration of time in 3-water box operation (maneuvers in and out of 3-water box operation can be considered high risk maneuvers).

(e) **IF** 3-water box operation is desired, **THEN PERFORM** Steps [5](f) and [5](k) in sequence. **IF** 3-water box operation is NOT desired, **THEN OMIT** Steps [5](f) and [5](k).

(f) **OPEN** MO-3875, INL XOVER (1-3 and 1-4 Inlet Water Boxes).

(g) **CLOSE/VERIFY CLOSED** the following Scavenger System valves:

- 27-HO-21, Scavenger Line from Cond 1-1 Inlet Water Box Block Vlv
- 27-HO-41, Scavenger Line from Cond 1-1 Outlet Water Box Block Vlv

(h) **OPEN** the following Scavenger System valves:

- 27-HO-20, Scavenger Line from Cond 1-1 Inlet Water Box Vent Vlv
- 27-HO-42, Scavenger Line from Cond 1-1 Outlet Water Box Vent Vlv

(i) **AFTER** the Condenser quadrant has drained, **CLOSE** MO-3882, WATER BOX #1 OUTL VLV (Seawater Outlet from 1-1 Condenser).

(j) **FULLY CLOSE** the following Water Box Inlet Valve:

- MO-3872 (Water Box #1 Inlet Valve)

(k) Once the circulating water outlet temperature indicates cooling has been re-established in cross-connected 1-3 Condenser, **OPEN** AO-3704, Cndsr B East Side Off Gas Valve SV-3704.

[6] For maintenance in the 1-3 Condenser, **PERFORM** the following:

(a) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704

NOTE

Steps [6](b) and [6](c) must be performed together.

(b) **PARTIALLY CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% *open when white light illuminates*):

- MO-3870 (Water Box #3 Inlet Valve)
- MO-3872 (Water Box #1 Inlet Valve)

(c) **WHEN** the first white light (12 to 18% OPEN position) comes on in Step [6](b), **THEN STOP** Seawater Pump B, P-105B.

(d) **FULLY CLOSE** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve)

NOTES

1. Refer to Precautions and Limitations Step 5.1[4] for recommended compensatory measures associated with 3-water box operation.
2. For optimum vacuum, the preferred alignment for establishing additional quadrant flow is via opening INL XOVER, MO-3875 (Crossover Valve for the 1-3 and 1-4 Inlet Water Box).
3. Prior to initiating 3-water box operation, consideration should be given to the following plant conditions:
   - Main Condenser vacuum (may degrade during 3-water box operation).
   - Intake Seawater Temperature (a major factor on Condenser vacuum).
   - Duration of time in 3-water box operation (maneuvers in and out of 3-water box operation can be considered high risk maneuvers).

(e) IF 3-water box operation is desired, THEN **PERFORM** Steps [6](f) and [6](k) in sequence. IF 3-water box operation is NOT desired, THEN **OMIT** Steps [6](f) and [6](k).

(f) **OPEN** MO-3865, INL XOVER (1-1 and 1-2 Inlet Water Boxes).

(g) **CLOSE/VERIFY CLOSED** the following Scavenger System Valves:

- 27-HO-24, Scavenger Line from Cond 1-3 Inlet Water Box Block Vlv
- 27-HO-45, Scavenger Line from Cond 1-3 Outlet Water Box Block Vlv

(h) **OPEN** the following Scavenger System Valves:

- 27-HO-25, Scavenger Line from Cond 1-3 Inlet Water Box Vent Vlv
- 27-HO-46, Scavenger Line from Cond 1-3 Outlet Water Box Vent Vlv

(i) AFTER the Condenser quadrant has drained, **CLOSE** MO-3880, WATER BOX #3 OUTL VLV (Seawater Outlet from 1-3 Condenser).

(j) **FULLY CLOSE** the following Water Box Inlet Valve:

- MO-3870 (Water Box #3 Inlet Valve)

(k) Once the circulating water outlet temperature indicates cooling has been re-established in cross-connected 1-1 Condenser, **OPEN** AO-3710, Cndsr A West Side Off Gas Valve SV-3710.

7.10.2 Turbine Limitations

Reactor power may be raised once three water boxes are in service. **IF** power is raised during the time that the Condenser is isolated, **OBSERVE** the following limitations:

[1] **DO NOT** allow vacuum to decrease to less than 26" Hg as indicated on CONDENSER VACUUM PR-3392 on Panel C2.

[2] The temperature differential between sections of the Condenser (hotwell) should not exceed 30°F. **USE** computer points CON024 and CON026.

[3] The thrust bearing metal temperature should not increase more than 5°F above starting point. **USE** computer points TUR014, TUR016, TUR018, and TUR020.

[4] **IF** any of the above limits are reached, **THEN START REDUCING** power.

7.10.3 Return To Normal

7.10.3.1 1-2 Condenser

[1] **VERIFY** all access doors to Condenser are closed.

[2] **CLOSE** the following Scavenger System Vent Valves:

- 27-HO-22, Scavenger Line from Cond 1-2 Inlet Water Box Vent Vlv
- 27-HO-43, Scavenger Line from Cond 1-2 Outlet Water Box Vent Vlv

[3] **OPEN** the following Scavenger System Valves:

- 27-HO-23, Scavenger Line Cond 1-2 Inlet Water Box Block Valve
- 27-HO-44, Scavenger LIne Cond 1-2 Outlet Water Box Block Valve

[4] **OPEN** Inlet Crossover Valve MO-3865, INL XOVER (1-1 and 1-2 Inlet Water Boxes) to the 1/4 OPEN position.

(a) **ALLOW** the Condenser to fill for 2 to 3 minutes.

(b) **FULLY OPEN** MO-3865, INL XOVER.

[5] **OPEN** Seawater Outlet from 1-2 Condenser, MO-3883, WATER BOX #2 OUTL VLV.

[6] **RESTART** Seawater Pump A, P-105A as follows:

(a) **VERIFY** the following valve lineup:

(1) MO-3873, WATER BOX #2 INL VLV, CLOSED

(2) MO-3871, WATER BOX #4 INL VLV, CLOSED

(3) MO-3865, WEST CONDENSER INL XOVER, OPEN

OR

MO-3875, EAST CONDENSER INL XOVER, OPEN

(4) MO-3866, WEST CONDENSER OUTL XOVER, CLOSED

(5) MO-3876, EAST CONDENSER OUTL XOVER, CLOSED

(6) MO-3882, WATER BOX #1 OUTL VLV, OPEN

(7) MO-3883, WATER BOX #2 OUTL VLV, OPEN

(8) MO-3880, WATER BOX #3 OUTL VLV, OPEN

(9) MO-3881, WATER BOX #4 OUTL VLV, OPEN

(b) **CLOSE OR VERIFY CLOSED** INL XOVER, MO-3865 **AND** INL XOVER, MO-3875.

(c) **PLACE** the Screenwash System with screens C and D in service. (**SEE** Section 7.8.2.)

(d) **PARTIALLY OPEN** the following Condenser Inlet Valves by momentarily turning their control switches on Panel C1 to "OPEN" position until white indicating lights illuminate (when the valves open 12 to 18%):

- MO-3871, WATER BOX #4 INL VLV
- MO-3873, WATER BOX #2 INL VLV

(e) **START** Seawater Pump A, P-105A, by its control switch on Panel C1.

(f) **FULLY OPEN** the following Condenser Inlet Valves:

- MO-3871, WATER BOX #4 INL VLV
- MO-3873, WATER BOX #2 INL VLV

(g) **VERIFY** pump amperage drops (from an initial high starting amperage to a running amperage of about 150 amps).

[7] Once the circulating water outlet temperature indicates cooling has been re-established in 1-2 Condenser, **OPEN** AO-3703, Cndsr A West Side Off Gas Valve SV-3703.

7.10.3.2 1-4 Condenser

[1] **VERIFY** all access doors to Condenser are closed.

[2] **CLOSE** the following Scavenger System Vent Valves:

- 27-HO-26, Scavenger Line from Cond 1-4 Inlet Water Box Vent Vlv
- 27-HO-47, Scavenger Line from Cond 1-4 Outlet Water Box Vent Vlv

[3] **OPEN** the following Scavenger System Valves:

- 27-HO-27, Scavenger Line Cond 1-4 Inlet Water Box Block Valve
- 27-HO-48, Scavenger LIne Cond 1-4 Outlet Water Box Block Valve

[4] **OPEN** Inlet Crossover Valve MO-3875, INL XOVER (1-3 and 1-4 Inlet Water Boxes) to the 1/4 OPEN position.

(a) **ALLOW** the Condenser to fill for 2 to 3 minutes.

(b) **FULLY OPEN** MO-3875, INL XOVER.

[5] **OPEN** Seawater Outlet from 1-4 Condenser, MO-3881, WATER BOX #4 OUTL VLV.

[6] **RESTART** Seawater Pump A, P-105A as follows:

(a) **VERIFY** the following valve lineup:

(1) MO-3873, WATER BOX #2 INL VLV, CLOSED

(2) MO-3871, WATER BOX #4 INL VLV, CLOSED

(3) MO-3865, WEST CONDENSER INL XOVER, OPEN

OR

MO-3875, EAST CONDENSER INL XOVER, OPEN

(4) MO-3866, WEST CONDENSER OUTL XOVER, CLOSED

(5) MO-3876, EAST CONDENSER OUTL XOVER, CLOSED

(6) MO-3882, WATER BOX #1 OUTL VLV, OPEN

(7) MO-3883, WATER BOX #2 OUTL VLV, OPEN

(8) MO-3880, WATER BOX #3 OUTL VLV, OPEN

(9) MO-3881, WATER BOX #4 OUTL VLV, OPEN

(b) **CLOSE OR VERIFY CLOSED** INL XOVER, MO-3865 **AND** INL XOVER, MO-3875.

(c) **PLACE** the Screenwash System with screens C and D in service. (**SEE** Section 7.8.2.)

(d) **PARTIALLY OPEN** the following Condenser Inlet Valves by momentarily turning their control switches on Panel C1 to "OPEN" position until white indicating lights illuminate (when the valves open 12 to 18%):

- MO-3871, WATER BOX #4 INL VLV
- MO-3873, WATER BOX #2 INL VLV

(e) **START** Seawater Pump A, P-105A, by its control switch on Panel C1.

(f) **FULLY OPEN** the following Condenser Inlet Valves:

- MO-3871, WATER BOX #4 INL VLV
- MO-3873, WATER BOX #2 INL VLV

(g) **VERIFY** pump amperage drops (from an initial high starting amperage to a running amperage of about 150 amps).

[7] Once the circulating water outlet temperature indicates cooling has been re-established in 1-4 Condenser, **OPEN** AO-3711, Cndsr B East Side Off Gas Valve SV-3711.

7.10.3.3 1-1 Condenser

[1] **VERIFY** all access doors to Condenser are closed.

[2] **CLOSE** the following Scavenger System Vent Valves:

- 27-HO-20, Scavenger Line from Cond 1-1 Inlet Water Box Vent Vlv
- 27-HO-42, Scavenger Line from Cond 1-1 Outlet Water Box Vent Vlv

[3] **OPEN** the following Scavenger System Valves:

- 27-HO-21, Scavenger Line Cond 1-1 Inlet Water Box Block Valve
- 27-HO-41, Scavenger Line Cond 1-1 Outlet Water Box Block Valve

[4] **OPEN** Inlet Crossover Valve MO-3865, INL XOVER (1-1 and 1-2 Inlet Water Boxes) to the 1/4 OPEN position.

(a) **ALLOW** the Condenser to fill for 2 to 3 minutes.

(b) **FULLY OPEN** MO-3865, INL XOVER.

[5] **OPEN** Seawater Outlet from 1-1 Condenser, MO-3882, WATER BOX #1 OUTL VLV.

[6] **RESTART** Seawater Pump B, P-105B as follows:

(a) **VERIFY** the following valve lineup:

(1) MO-3872, WATER BOX #1 INL VLV, CLOSED

(2) MO-3870, WATER BOX #3 INL VLV, CLOSED

(3) MO-3865, WEST CONDENSER INL XOVER, OPEN

OR

MO-3875, EAST CONDENSER INL XOVER, OPEN

(4) MO-3866, WEST CONDENSER OUTL XOVER, CLOSED

(5) MO-3876, EAST CONDENSER OUTL XOVER, CLOSED

(6) MO-3882, WATER BOX #1 OUTL VLV, OPEN

(7) MO-3883, WATER BOX #2 OUTL VLV, OPEN

(8) MO-3880, WATER BOX #3 OUTL VLV, OPEN

(9) MO-3881, WATER BOX #4 OUTL VLV, OPEN

(b) **CLOSE OR VERIFY CLOSED** INL XOVER, MO-3865 **AND** INL XOVER, MO-3875.

(c) **PLACE** the Screenwash System with screens A and B in service. (**SEE** Section 7.8.2.)

(d) **PARTIALLY OPEN** the following Condenser Inlet Valves by momentarily turning their control switches on Panel C1 to "OPEN" position until white indicating lights illuminate (when the valves open 12 to 18%):

- MO-3870, WATER BOX #3 INL VLV
- MO-3872, WATER BOX #1 INL VLV

(e) **START** Seawater Pump B, P-105B, by its control switch on Panel 1.

(f) **FULLY OPEN** the following Condenser Inlet Valves:

- MO-3870, WATER BOX #3 INL VLV
- MO-3872, WATER BOX #1 INL VLV

(g) **VERIFY** pump amperage drops (from an initial high starting amperage to a running amperage of about 150 amps).

[7] Once the circulating water outlet temperature indicates cooling has been re-established in 1-1 Condenser, **OPEN** AO-3710, Cndsr A West Side Off Gas Valve SV-3710.

7.10.3.4 1-3 Condenser

[1] **VERIFY** all access doors to Condenser are closed.

[2] **CLOSE** the following Scavenger System Vent Valves:

- 27-HO-25, Scavenger Line from Cond 1-3 Inlet Water Box Vent Vlv
- 27-HO-46, Scavenger Line from Cond 1-3 Outlet Water Box Vent Vlv

[3] **OPEN** the following Scavenger System Valves:

- 27-HO-25, Scavenger Line Cond 1-3 Inlet Water Box Block Valve
- 27-HO-46, Scavenger Line Cond 1-3 Outlet Water Box Block Valve

[4] **OPEN** Inlet Crossover Valve MO-3875, INL XOVER (1-3 and 1-4 Inlet Water Boxes) to the 1/4 OPEN position.

(a) **ALLOW** the Condenser to fill for 2 to 3 minutes.

(b) **FULLY OPEN** MO-3875, INL XOVER.

[5] **OPEN** Seawater Outlet from 1-3 Condenser, MO-3880, WATER BOX #3 OUTL VLV.

[6] **RESTART** Seawater Pump B, P-105B as follows:

(a) **VERIFY** the following valve lineup:

(1) MO-3873, WATER BOX #2 INL VLV, CLOSED

(2) MO-3871, WATER BOX #4 INL VLV, CLOSED

(3) MO-3865, WEST CONDENSER INL XOVER, OPEN

OR

MO-3875, EAST CONDENSER INL XOVER, OPEN

(4) MO-3866, WEST CONDENSER OUTL XOVER, CLOSED

(5) MO-3876, EAST CONDENSER OUTL XOVER CLOSED

(6) MO-3882, WATER BOX #1 OUTL VLV, OPEN

(7) MO-3883, WATER BOX #2 OUTL VLV, OPEN

(8) MO-3880, WATER BOX #3 OUTL VLV, OPEN

(9) MO-3881, WATER BOX #4 OUTL VLV, OPEN

(b) **CLOSE** OR **VERIFY CLOSED** INL XOVER, MO-3865 AND INL XOVER, MO-3875.

(c) **PLACE** the Screenwash System with screens A and B in service. (**SEE** Section 7.8.2.)

(d) **PARTIALLY OPEN** the following Condenser Inlet Valves by momentarily turning their control switches on Panel C1 to "OPEN" position until white indicating lights illuminate (when the valves open 12 to 18%):

- MO-3871, WATER BOX #4 INL VLV
- MO-3873, WATER BOX #2 INL VLV

(e) **START** Seawater Pump B, P-105B, by its control switch on Panel C1.

(f) **FULLY OPEN** the following Condenser Inlet Valves:

- MO-3871, WATER BOX #4 INL VLV
- MO-3873, WATER BOX #2 INL VLV

(g) **VERIFY** pump amperage drops (from an initial high starting amperage to a running amperage of about 150 amps).

[7] Once the circulating water outlet temperature indicates cooling has been re-established in 1-3 Condenser, **OPEN** AO-3704, Cndsr B East Side Off Gas Valve SV-3704.

7.10.4 Throttling of Condenser Water Box Outlet Valves

NOTES

1. In the event of elevated hotwell temperatures, elevated Condenser water box differential temperatures, or elevated Condenser water box outlet temperatures, it may be necessary to throttle the opposite water box's outlet valve in order to increase cooling flow through the affected water box. **THIS IS NOT A NORMAL OPERATION** and should be performed ONLY at the discretion of the SM while attempting to restore vacuum.

2. Elevated Condenser temperatures will be indicated by the following computer points:

Point		Limit
CON024	E. Cond. Hotwell Outlet Temp	104°F
CON026	W. Cond. Hotwell Outlet Temp	104°F
C046M	Condenser ΔT A1-2	31.5°F
C047M	Condenser ΔT B1-2	31.5°F
C048M	Condenser ΔT A1-4	31.5°F
C049M	Condenser ΔT B1-3	31.5°F
CWS036	1-2 Cond Outlet Temp	102°F
CWS034	1-1 Cond Outlet Temp	102°F
CWS040	1-4 Cond Outlet Temp	102°F
CWS038	1-3 Cond Outlet Temp	102°F

3. Condenser water box outlet valves (MO-3880, MO-3881, MO-3882, and MO-3883) are jog to close and seal-in to open valves.

[1] **IF** excessive Condenser Δ temperatures are noted on a water box **AND** lowered flow through that box is suspected as the cause, **THEN PERFORM** the following to increase flow through that box:

(a) **MONITOR** water box Δ temperatures.

(b) **THROTTLE CLOSED** the Condenser outlet valve for the water box with the lowest Δ temp to increase flow through the hot water box.

WATER BOX #1 OUTL VLV, MO-3882

WATER BOX #2 OUTL VLV, MO-3883

WATER BOX #3 OUTL VLV, MO-3880

WATER BOX #4 OUTL VLV, MO-3881

8.0 ATTACHMENTS

ATTACHMENT 1 - CONDENSER BACKWASH ALIGNMENTS AND PREREQUISITES

ATTACHMENT 2 - MAIN CONDENSER BACKWASH (BACKWASH 'B', BACKWASH 'A')

ATTACHMENT 3 - MAIN CONDENSER BACKWASH (BACKWASH 'A', BACKWASH 'B')

ATTACHMENT 4 - THERMAL BACKWASH OF THE MAIN CONDENSER (BACKWASH 'B', THERMAL 'A', THERMAL 'B')

ATTACHMENT 5 - THERMAL BACKWASH OF THE MAIN CONDENSER (BACKWASH 'A', THERMAL 'B', THERMAL 'A')

ATTACHMENT 6 - THERMAL BACKWASH OF THE MAIN CONDENSER (THERMAL 'B', THERMAL 'A')

ATTACHMENT 7 - THERMAL BACKWASH OF THE MAIN CONDENSER (THERMAL 'A', THERMAL 'B')

ATTACHMENT 8 - CONDENSER COOLING WATER TEMPERATURE DATA SHEET

ATTACHMENT 9 - CONDENSER BACKWASH DATA SHEET

ATTACHMENT 10 - SCREENHOUSE DRAWING SECTION

ATTACHMENT 11 - RE-ENGAGING THE SLUICE GATE OPERATOR CLUTCH

ATTACHMENT 12 - HEAT TREATMENT REGIME FOR BLUE MUSSELS

ATTACHMENT 13 - SEAWATER SYSTEM BACKWASH RESTORATION VERIFICATION

ATTACHMENT 14 - BLOWDOWN OF LP AND HP TRAVELING SCREEN SPRAY HEADER STRAINERS

CONDENSER BACKWASH ALIGNMENTS AND PREREQUISITES

1.0 PURPOSE

These sections provide instructions for demonstrating equipment performance and aligning systems to support Main Condenser backwashing.

2.0 AUTHORIZATION

[1] Sections 3.0, 4.0, 5.0, 6.0, 7.0, and 8.0 of this Attachment may be performed in any sequence. Once a step is started, it must be completed to re-establish normal system lineup.

[2] **OBTAIN** Shift Manager permission to perform the following:

- ☐ Cycle Main Condenser backwash outlet valves
- ☐ Cycle the sluice gates
- ☐ Cycle the traveling screens
- ☐ Secure Seawater Pump Column Flush (if in service)
- ☐ Verify the alignment of scavenging system
- ☐ Caution-tag the hydrogen injection controller to support Condenser backwash.

_____ _____
Shift Manager Date

[3] Personnel assigned to perform this Attachment have read the applicable sections/steps and understand their required involvement. All personnel (i.e., Operations, Maintenance) who will complete procedural steps must print their name and sign their initials below.

Name (print)	Initials	Name (print)	Initials

3.0 OUTLET CROSSOVER EXERCISE

Initials

[1] **OPEN** MO-3876, Outlet Xover Valve for 1-3 and 1-4 Water Boxes. _____

[2] **CLOSE** MO-3876, Outlet Xover Valve for 1-3 and 1-4 Water Boxes. _____

[3] **OPEN** MO-3866, Outlet Xover Valve for 1-1 and 1-2 Water Boxes. _____

[4] **CLOSE** MO-3866, Outlet Xover Valve for 1-1 and 1-2 Water Boxes. _____

4.0 SLUICE GATE EXERCISE

CAUTIONS

1. The Rear SSW Sluice Gate must be open prior to cycling East and West SSW Sluice Gates.
2. The portable sluice gate opener cannot be used to seat or unseat the gate. The first and last inch of gate travel should be accomplished with the hand crank.

[1] **OPEN** the Rear SSW Sluice Gate (X-367C). _____

[2] **CLOSE** East SSW Sluice Gate (X-367A). _____

[3] **OPEN** East SSW Sluice Gate (X-367A). _____

[4] **CLOSE** West SSW Sluice Gate (X-367B). _____

[5] **OPEN** West SSW Sluice Gate (X-367B). _____

[6] **IF** proceeding directly into a backwash, **THEN ENTER** "N/P" for this step.

OR

IF NOT proceeding directly into a backwash, **THEN CLOSE** the Rear SSW Sluice Gate (X-367C).

RECORD "As-Left" Rear Gate Position. _____ _____
(Open/Closed)

5.0 TRAVELING SCREEN VERIFICATION

Initials

[1] **OPERATE** the traveling screens in the FORWARD direction in accordance with base document Section 7.8 for approximately 30 minutes (minimum). _____

(a) **RAISE** the traveling screen speed to FAST for approximately 1 minute. _____

(b) **RETURN** the traveling screen to slow speed. _____

[2] **VERIFY** screenwash strainer differential pressure is ≤ 10 psid. _____

(a) **IF** the screenwash strainer differential pressure is > 10 psid, **THEN CHANGE OVER** to the clean strainer in accordance with base document Step 7.8.2[14].

[3] **IF** conditions permit, **SECURE** traveling screens and screenwash system. _____

6.0 SEAWATER PUMP COLUMN FLUSH SYSTEM

[1] **CLOSE/VERIFY CLOSED** the following valves associated with Seawater Pump "A":

- 29-HO-3938A, Seawater Pump A Column Flush Connection Valve _____
- 34-HO-303, Seawater Pump A Domestic Water Flush Valve _____

[2] **CLOSE/VERIFY CLOSED** the following valves associated with Seawater Pump "B":

- 29-HO-3938B, Seawater Pump B Column Flush Connection Valve _____
- 34-HO-302, Seawater Pump B Domestic Water Flush Valve _____

7.0 WATER BOX SCAVENING SYSTEM ALIGNMENT

Initials

[1] **CLOSE/VERIFY CLOSED** the following valves:

- 27-HO-3, Scavenger Line from Condenser 1-1 Outlet Water Box Block Valve _____
- 27-HO-4, Scavenger Line from Condenser 1-2 Outlet Water Box Block Valve _____
- 27-HO-7, Scavenger Line from Condenser 1-3 Outlet Water Box Block Valve _____
- 27-HO-8, Scavenger Line from Condenser 1-4 Outlet Water Box Block Valve _____
- 27-HO-9, Scavenger Line to Water Box Vacuum Control Tank Block Valve _____

[2] **CLOSE/VERIFY CLOSED** the following valves:

- 27-HO-1, Scavenger Line from Condenser 1-1 Inlet Water Box Block Valve _____
- 27-HO-2, Scavenger Line from Condenser 1-2 Inlet Water Box Block Valve _____
- 27-HO-5, Scavenger Line from Condenser 1-3 Inlet Water Box Block Valve _____
- 27-HO-6, Scavenger Line from Condenser 1-4 Inlet Water Box Block Valve _____

8.0 H_2 INJECTION TAGGING

[1] **CAUTION TAG** the in-service ETS H_2 controller to identify that H_2 injection will be lowered to 5 SCFM when sequenced by the applicable backwash Attachment. _____

9.0 CHEMISTRY NOTIFICATION

Initials

[1] **PRIOR** to the performance of a Thermal Backwash, **NOTIFY** Chemistry to perform ambient pH analysis of Seawater Intake for the NPDES permit. (**IF** a Thermal Backwash is NOT planned, **ENTER** "N/P" for this notification.) _____

[2] **RECORD** the name of the individual notified, the date, and the time.

_____ _____ _____ _____
Name Date Time

10.0 EPIC COMPUTER MONITORING

[1] **VERIFY/ESTABLISH** an EPIC Special Log containing the following points available to be activated to run every 5 minutes during the backwash: _____

- CWS002 - Seawater Pump A Inlet Temp*
- CWS004 - Seawater Pump B Inlet Temp*
- CWS020 - A Seawater Pump Discharge Temperature
- CWS018 - B Seawater Pump Discharge Temperature
- RBC010 - SSW to A Cooling Water Loops
- RBC012 - SSW to B Cooling Water Loops
- CON024 - East Condenser Hotwell Outlet Temperature
- CON026 - West Condenser Hotwell Outlet Temperature
- TUR010 - West Condenser Vacuum
- TUR012 - East Condenser Vacuum
- GEN012 - Stator Cooling Hdr Inlet
- C017M - Core Thermal Power
- PES028 - Generator Gross Power

* If the CW temperature indicators for some reason are not available, then utilize the other available temperature indications and/or computer points that are available in order to satisfy the NPDES permit requirements.

MAIN CONDENSER BACKWASH (BACKWASH 'B', BACKWASH 'A')

1.0 INITIAL CONDITIONS

[1] **PERFORM** a Pre-Evolution Brief Checklist in accordance with Section 6.10 of PNPS 1.3.34. Below is a list of items that should be covered during the Pre-Evolution Brief.

(a) Appropriate groups notified - Radiation Protection/Chemistry/ISO New England

(b) Review all Precautions and Limitations in base document Section 5.0 of this Procedure.

(c) Human performance tools including robust barriers are utilized throughout the evolution.

(d) Reactor water level responsibility assigned.

(e) The proper Attachment of this Procedure for the planned evolution has been identified and personnel in the field have a copy.

(f) Communications between the Control Room and field Operators can be established - field Operators have headsets, if required.

(g) Sluice gates are properly aligned and previously exercised.

(h) Condenser vacuum is monitored throughout backwash.

(i) Speed Load Changer is adjusted as necessary in accordance with PNPS 2.1.14.

(j) Feedwater heater levels are monitored.

(k) Line of communication with divers, if applicable.

(l) Sluiceway aligned to discharge canal

(m) Maintain Main Condenser ΔT's within limits. (Refer to base document Section 5.2 of this Procedure.)

(n) Maximum discharge temp of 118°F (120°F EPA limit)

(o) Maximum hotwell temp of 120°F

[2] **ATTACH** the Pre-Evolution Brief Checklist to this Procedure.

[3] Proper notifications made in accordance with PNPS 1.3.12 and permission to begin backwash granted.

(a) **VERIFY** Attachment 1 (Condenser Backwash Alignments and Prerequisites) has been completed **AND** is attached to this Procedure.

Shift Manager Date

1.0 INITIAL CONDITIONS (Continued)

[4] Personnel assigned to perform steps within this Attachment have read the applicable sections/steps and understand their required involvement. All personnel (i.e., Operations, Maintenance) who will complete procedural steps must print their name and sign their initials below.

Name (print)	Initials	Name (print)	Initials
Name (print)	Initials	Name (print)	Initials
Name (print)	Initials	Name (print)	Initials
Name (print)	Initials	Name (print)	Initials

NOTES

1. Perform only those sections necessary for the backwash evolution planned. Steps in sections not performed may be omitted by placing "N/P" and CRS initialing in the initial block. (Refer to PNPS 1.3.34.)
2. Attachment 1 (Condenser Backwash Alignments and Prerequisites) has been completed.
3. When complete, Attachment 2 shall be filed in the Control Room Annex files.
4. Special log will be attached to this Procedure upon completion.
5. For Condenser backwashing, sluiceway baffle plates should be positioned to divert screenwash flow and debris to West side (discharge canal).
6. All water box outlet valves are jog valves in the closed direction only.
7. This Attachment has been written for backwashing of the Main Condenser only. If another sequence is planned, perform the appropriate Attachment.
8. Conductivity monitoring requires temperature compensation to accurately indicate the process conductivity. This temperature compensation results in a delay in the detection instrumentation circuitry. Therefore, when the process temperature rises (i.e., during a Condenser backwash), conductivity indication will also rise until the temperature compensation circuitry has had sufficient time to correct for the rise in temperature. This response time should be < 5 minutes. If the rise in conductivity persists or continues to increase, then enter PNPS 2.4.33. Ensure Chemistry is also monitoring similar point(s) on the Chemistry Lab computer. Validate Control Room indications with Chemistry if a chloride intrusion is suspected.

1.0 INITIAL CONDITIONS (Continued)

CAUTIONS

1. When a Condenser quadrant does not have cooling flow, the associated vapor valve to the SJAE must be closed to prevent choking of the SJAE. After cooling flow is restored, the vapor valves may be reopened once sufficient cooling has been established, as evidenced by the outlet temperature of the circulating water being at or near the outlet temperatures of the other in-service quadrants and stable.
2. The presence of intake biofouling by mussels larger than 10 mm increases the potential for significant CWS component blockage should the backwash temperature exceed 75°F.

Initials

[5] **ACTIVATE** the special log on EPIC to run every 5 minutes during the performance of this Attachment and to include the following: _____

- CWS002 - Seawater Pump A Inlet Temp*
- CWS004 - Seawater Pump B Inlet Temp*
- CWS020 - A Seawater Pump Discharge Temperature
- CWS018 - B Seawater Pump Discharge Temperature
- RBC010 - SSW to A Cooling Water Loops
- RBC012 - SSW to B Cooling Water Loops
- CON024 - East Condenser Hotwell Outlet Temperature
- CON026 - West Condenser Hotwell Outlet Temperature
- TUR010 - West Condenser Vacuum
- TUR012 - East Condenser Vacuum
- GEN012 - Stator Cooling Hdr Inlet
- C017M - Core Thermal Power
- PES028 - Generator Gross Power

* If the CW temperature indicators for some reason are not available, then utilize the other available temperature indications and/or computer points that are available in order to satisfy the NPDES permit requirements.

1.0 INITIAL CONDITIONS (Continued)

NOTE

Prior to dispatching an Operator to the Screenhouse, ensure he/she has a copy of Attachment 9 (Condenser Backwash Data Sheet) to record data during the times the screens are operating in the reverse direction.

CAUTIONS

1. When reversing screens for backwashing the Condenser, the screens' two-speed control switches should be placed to the "FAST" (20 FPM) position.
2. The Rear SSW Sluice Gate must be open prior to closing the East or West SSW Sluice Gate.

Initials

[6] **PRIOR** to reducing power for the Main Condenser backwash, **ENSURE** sluice gate alignment by performing the following:

(a) **OPEN/VERIFY OPEN** the Rear SSW Sluice Gate (X-367C). _____

(b) **CLOSE** the West SSW Sluice Gate (X-367B). _____

[7] **SECURE/VERIFY SECURED** SSW and SW hypochlorite injection in accordance with PNPS 2.2.95, *"Chlorination System"*. _____

- **ENSURE** SSW Hypochlorination System status changes are logged in the CRS logbook. _____
- **ENSURE** Chemistry is notified of SSW Hypochlorination System status changes. _____

1.0 INITIAL CONDITIONS (Continued)

CAUTION

Single seawater pump operation at too high of a Reactor power level can cause Main Condenser differential temperatures to exceed the EPA limit of 32°F or Main Condenser vacuum to degrade.

Initials

[8] **REDUCE** Reactor power in accordance with PNPS 2.1.14 to a level acceptable for a backwash as determined by CRS/SM while constantly monitoring Main Condenser vacuum and differential temperatures. _____

[9] **PRIOR** to backwash, **LOWER** hydrogen flow to 5 SCFM in accordance with PNPS 10.2.4. **[CY.3-1]** _____

[10] **RECORD** initial data on Attachment 9 (Condenser Backwash Data Sheet). _____

CAUTION

Opening and/or closing of the Main Condenser Vapor Valves (AO-3703, AO-3704, AO-3710, and AO-3711) can affect dose rates and impact personnel exposure if work is taking place near any offgas process piping (Recombiner Room, Condenser Bay, and AOG 5' elevation).

[11] **PRIOR** to opening/closing any Main Condenser Vapor Valve (AO-3703, AO-3704, AO-3710, and/or AO-3711) in this Attachment, **NOTIFY** Radiation Protection. _____

2.0 BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B

Initials

[1] **OPERATE** Screenwash System with all available screens running in the forward direction (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation). _____

[2] **PRIOR** to backwash, **RECORD** Circulating Water Pump amps. _____

P-105A amps _____ P-105B amps _____

[3] **OPEN/VERIFY OPEN** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

[4] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

2.0 BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B (Continued)

NOTE

Steps [5] and [6] must be performed together.

CAUTION

During initial entry into a Main Condenser backwash alignment, Condensate Demineralizer Conductivity HI alarms at Panel C904R may be experienced due to time delays associated with instrument temperature compensation. If the observed conductivity rise persists for greater than 5 minutes, then enter PNPS 2.4.33.

Initials

[5] **CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[6] **WHEN** the first white (12 to 18% OPEN position) light comes on in Step [5], **THEN STOP** Seawater Pump B, P-105B. _____

[7] **IF** Seawater Pump B, P-105B, is required to be isolated, **THEN PERFORM** the following (**IF** not required, **ENTER** "N/P"):

(a) **CLOSE/VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710 _____
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704 _____

(c) **TAG OUT** Seawater Pump B, P-105B. _____

(d) **WHEN** maintenance is complete, **DE-TAG** Seawater Pump B, P-105B. _____

2.0 BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B (Continued)

Initials

[8] **OPERATE** screens A and B on FAST speed in the reverse direction or as directed by the SM. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[9] **OPEN** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[10] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

[11] **OPEN/VERIFY OPEN** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710 _____
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704 _____

BACKWASH IS NOW ESTABLISHED.

[12] **RECORD** Circ Water Pump amps at elapsed times of 15 and 30 minutes. _____

P-105A amps (15 min): _____ (30 min):_____

[13] **BACKWASH** until screens A and B are clean **OR** TI-38016 (A Loop SSW Inlet Temp to RBCCW Ht Ex) or TI-38017 (B Loop SSW Inlet Temp to RBCCW Ht Ex) indicates SSW loop temperatures of no greater than 74.1°F. _____

[14] **HAVE** the field Operator complete the second half of Attachment 9 (Condenser Backwash Data Sheet). _____

2.1 Multiple Backwashes Of The 1-1 And 1-3 Inlet Water Boxes

NOTE

If desired, placing the Condenser into and out of backwash may improve mussel removal from the tube sheet.

Initials

[1] **IF** desired to perform multiple backwash alignments, **THEN PERFORM** the following (**IF** not performed, **ENTER** "N/P"):

(a) **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

(b) **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

(c) **REPEAT** Steps 2.1[1](a) and (b), as necessary, to clean the 1-1 and 1-3 Inlet Water Boxes. _____

2.2 Returning from Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump B)

Initials

[1] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

[2] **CLOSE** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[3] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

[4] **STOP** reverse rotation of screens A and B **AND** **OPERATE** screens A and B in forward direction. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[5] **IF** Seawater Pump B, P-105B, is required to be isolated, **THEN** **PERFORM** the following (**IF** not required, **ENTER** "N/P"):

(a) **VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710. _____
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704. _____

(c) **TAG OUT** Seawater Pump B, P-105B. _____

2.2 Returning from Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump B) (Continued)

Initials

(d) **WHEN** maintenance is complete, **DE-TAG** Seawater Pump B, P-105B. _____

[6] **OPEN** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[7] **WHEN** either Water Box Inlet Valve MO-3872 **OR** MO-3870 indicates 12 to 18% OPEN, **THEN START** Seawater Pump B, P-105B. _____

[8] **FULLY OPEN/VERIFY OPEN** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[9] **OPEN/VERIFY OPEN** the following Condenser Offgas Vapor Valves:

(a) AO-3703, CNDSR A WEST SIDE OFFGAS VALVE (SV-3703, Water Box 1-2) _____

(b) AO-3710, CNDSR A WEST SIDE OFFGAS VALVE (SV-3710, Water Box 1-1) _____

(c) AO-3704, CNDSR B EAST SIDE OFFGAS VALVE (SV-3704, Water Box 1-3) _____

(d) AO-3711, CNDSR B EAST SIDE OFFGAS VALVE (SV-3711, Water Box 1-4) _____

[10] **ALLOW** all seawater and cooling water temperature to stabilize before continuing. _____

2.2 Returning from Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump B) (Continued)

CAUTION

Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

Initials

[11] **WHEN** notified by the Control Room, **OPEN** West SSW Sluice Gate (X-367B). _____

[12] **RECORD** Circulating Water Pump amps after backwash. _____

P-105A amps _____ P-105B amps _____

[13] **IF** not continuing to backwash 1-2 and 1-4 Inlet Water Boxes (through Pump A), **THEN PERFORM** the following:

(a) **TERMINATE** the special log. _____

(b) **ATTACH** the special log to this Procedure. _____

(c) **CONTINUE** with Section 4.0 of this Attachment. _____

3.0 BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP A

CAUTIONS

1. Failure to do the following step may lead to pump damage as well as loss of cooling water to the RBCCW and TBCCW heat exchangers. Always check from this point on that at least two sluice gates to the SSW Pumps are always open.
2. Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

Initials

[1] **VERIFY OPEN OR OPEN** the Rear SSW Sluice Gate (X-367C). _____

[2] **WHEN** notified by the Control Room, **CLOSE** the East SSW Sluice Gate (X-367A). _____

[3] **OPERATE** Screenwash System with all available screens running in the forward direction (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation). _____

[4] **PRIOR** to backwash, **RECORD** Circulating Water Pump amps. _____

(a) P-105A amps _____ P-105B amps _____

[5] **OPEN/VERIFY OPEN** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

[6] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

3.0 BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP A (Continued)

NOTE

Steps [7] and [8] must be performed together.

CAUTION

During initial entry into a Main Condenser backwash alignment, Condensate Demineralizer Conductivity HI alarms at Panel C904R may be experienced due to time delays associated with instrument temperature compensation. If the observed conductivity rise persists for greater than 5 minutes, then enter PNPS 2.4.33.

Initials

[7] **CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[8] **WHEN** the first white (12% to 18% OPEN position) light comes on in Step [7], **THEN STOP** Seawater Pump A, P-105A. _____

[9] **IF** Seawater Pump A, P-105A, is required to be isolated, **THEN PERFORM** the following (**IF** not required, **ENTER** "N/P"):

(a) **CLOSE/VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703 _____
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711 _____

(c) **TAG OUT** Seawater Pump A, P-105A. _____

(d) **WHEN** maintenance complete, **DE-TAG** Seawater Pump A, P-105A. _____

3.0 BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP A (Continued)

Initials

[10] **OPERATE** screens C and D on FAST speed in the reverse direction or as directed by the SM. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[11] **OPEN** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[12] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

[13] **OPEN/VERIFY OPEN** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703 _____
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711 _____

BACKWASH IS NOW ESTABLISHED.

[14] **RECORD** Circ Water Pump amps at elapsed times of 15 and 30 minutes. _____

P-105B amps (15 min): _____ (30 min): _____

[15] **BACKWASH** until screens C and D are clean **OR** TI-38016 (A Loop SSW Inlet Temp to RBCCW Ht Ex) or TI-38017 (B Loop SSW Inlet Temp to RBCCW Ht Ex) indicates an SSW Loop temperature of no greater than 74.1°F. _____

[16] **HAVE** the field Operator complete the second half of Attachment 9 (Condenser Backwash Data Sheet). _____

3.1 Multiple Backwashes Of The 1-2 And 1-4 Inlet Water Boxes

NOTE

If desired, placing the Condenser into and out of backwash may improve mussel removal from the tube sheet.

Initials

[1] **IF** desired to perform multiple backwash alignments, **THEN PERFORM** the following (**IF** not performed, **ENTER** "N/P"):

(a) **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

(b) **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

(c) **REPEAT** Steps 3.1[1](a) and (b), as necessary, to clean the 1-2 and 1-4 Inlet Water Boxes. _____

3.2 Returning From Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A)

[1] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

[2] **CLOSE** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[3] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

3.2 Returning From Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A) (Continued)

Initials

[4] **STOP** reverse rotation of screens C and D **AND OPERATE** screens C and D in the forward direction. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[5] **IF** Seawater Pump A, P-105A, is required to be isolated, **THEN PERFORM** the following (**IF** not required, **ENTER** "N/P"):

(a) **VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703 _____
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711 _____

(c) **TAG OUT** Seawater Pump A, P-105A. _____

(d) **WHEN** maintenance is complete, **DE-TAG** Seawater Pump A, P-105A. _____

[6] **OPEN** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[7] **WHEN** either Water Box Inlet Valve MO-3873 **OR** MO-3871 indicates 12 to 18% OPEN, **THEN START** Seawater Pump A, P-105A. _____

3.2 Returning From Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A) (Continued)

Initials

[8] **FULLY OPEN/VERIFY OPEN** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[9] **OPEN/VERIFY OPEN** the following Condenser Offgas Vapor Valves:

(a) AO-3703, CNDSR A WEST SIDE OFFGAS VALVE (SV-3703, Water Box 1-2) _____

(b) AO-3710, CNDSR A WEST SIDE OFFGAS VALVE (SV-3710, Water Box 1-1) _____

(c) AO-3704, CNDSR B EAST SIDE OFFGAS VALVE (SV-3704, Water Box 1-3) _____

(d) AO-3711, CNDSR B EAST SIDE OFFGAS VALVE (SV-3711, Water Box 1-4) _____

[10] **ALLOW** all seawater and cooling water temperatures to stabilize before continuing. _____

CAUTION

Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

[11] **WHEN** notified by the Control Room, **OPEN** the East SSW Sluice Gate (X-367A). _____

[12] **RECORD** Circulating Water Pump amps after backwash. _____

P-105A amps _____ P-105B amps _____

[13] **TERMINATE** special log **AND ATTACH** it to this Procedure. _____

[14] **CONTINUE** with Section 4.0 of this Attachment. _____

4.0 SEAWATER SYSTEM BACKWASH RESTORATION

Initials

[1] **CLOSE** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

[2] **ALIGN/VERIFY ALIGNED** the SSW sluice gates as follows:

(a) West sluice gate (X-376B) OPEN _____

(b) East sluice gate (X-376A) OPEN _____

(c) Rear sluice gate (X-376C) CLOSED _____

[3] **OPEN/VERIFY OPEN** the following valves:

- 27-HO-3, Scavenger Line from Condenser 1-1 Outlet Water Box Block Valve _____
- 27-HO-4, Scavenger Line from Condenser 1-2 Outlet Water Box Block Valve _____
- 27-HO-7, Scavenger Line from Condenser 1-3 Outlet Water Box Block Valve. _____
- 27-HO-8, Scavenger Line from Condenser 1-4 Outlet Water Box Block Valve. _____
- 27-HO-9, Scavenger Line to Water Box Vacuum Control Tank Block Valve. _____

[4] **PLACE** the SSW **AND** SW Hypochlorination System in service in accordance with PNPS 2.2.95. _____

- **ENSURE** SSW Hypochlorination System status changes are logged in the CRS logbook. _____
- **ENSURE** Chemistry is notified of SSW Hypochlorination System status changes. _____

[5] **CLEAR** the Caution Tag on the hydrogen controller in service **AND RESTORE** hydrogen injection flow to normal in accordance with PNPS 10.2.4. _____

4.0 SEAWATER SYSTEM BACKWASH RESTORATION (Continued)

Initials

[6] **PERFORM** Attachment 13 (Seawater System Backwash Restoration Verification) **AND ATTACH** to this Procedure. _____

[7] **VERIFY** the following:

(a) Backwash complete. _____

(b) Screenwash System returned to Normal/Standby lineup. _____

(c) Hypochlorination System in service in accordance with PNPS 2.2.95. _____

(d) Attachment 8/Special Log reviewed and attached. _____

(e) All required data has been recorded on the appropriate copies of Attachment 9 and attached. _____

(f) Hydrogen injection restored to normal flow rate. _____

(g) Attachment 13 (Seawater System Backwash Restoration Verification) complete. _____

(h) Attachment 2 (Backwashing of the Main Condenser) complete. _____

[8] Backwash completed and all Attachments/Special Log reviewed.

_____ _____
On-Shift SRO Date

[9] **FORWARD** a copy of this Attachment and all Attachment 9 forms to the Mechanical/Civil/Structural Engineering System Engineer.

_____
OA Init.

MAIN CONDENSER BACKWASH (BACKWASH 'A', BACKWASH 'B')

1.0 INITIAL CONDITIONS

[1] **PERFORM** a Pre-Evolution Brief Checklist in accordance with Section 6.10 of PNPS 1.3.34. Below is a list of items that should be covered during the Pre-Evolution Brief.

(a) Appropriate groups notified - Radiation Protection/Chemistry/ISO New England

(b) Review all Precautions and Limitations in base document Section 5.0 of this Procedure.

(c) Human performance tools including robust barriers are utilized throughout the evolution.

(d) Reactor water level responsibility assigned.

(e) The proper Attachment of this Procedure for the planned evolution has been identified and personnel in the field have a copy.

(f) Communications between the Control Room and field Operators can be established - field Operators have headsets, if required.

(g) Sluice gates are properly aligned and previously exercised.

(h) Condenser Vacuum is monitored throughout backwash.

(i) Speed Load Changer is adjusted as necessary in accordance with PNPS 2.1.14.

(j) Feedwater Heater Levels are monitored.

(k) Line of communication with divers, if applicable.

(l) Sluiceway aligned to discharge canal

(m) Maintain Main Condenser ΔT's within limits. (Refer to base document Section 5.2 of this Procedure.)

(n) Maximum discharge temp of 118°F (120°F EPA limit)

(o) Maximum hotwell temp of 120°F

[2] **ATTACH** the Pre-Evolution Brief Checklist to this Procedure.

1.0 INITIAL CONDITIONS (Continued)

[3] Proper notifications made in accordance with PNPS 1.3.12 and permission to begin backwash granted.

(a) **VERIFY** Attachment 1 (Condenser Backwash Alignments and Prerequisites) has been completed **AND** is attached to this Procedure.

_____
Shift Manager Date

[4] Personnel assigned to perform steps within this Attachment have read the applicable sections/steps and understand their required involvement. All personnel (i.e., Operations, Maintenance) who will complete procedural steps must print their name and sign their initials below.

Name (print)	Initials	Name (print)	Initials
Name (print)	Initials	Name (print)	Initials
Name (print)	Initials	Name (print)	Initials
Name (print)	Initials	Name (print)	Initials

1.0 INITIAL CONDITIONS (Continued)

NOTES

1. Perform only those sections necessary for the backwash evolution planned. Steps in sections not performed may be omitted by placing "N/P" and CRS initialing in the initial block. (Refer to PNPS 1.3.34.)

2. Attachment 1 (Condenser Backwash Alignments and Prerequisites) has been completed.

3. When complete, Attachment 3 shall be filed in the Control Room Annex files.

4. Special log will be attached to this Procedure upon completion.

5. For Condenser backwashing, sluiceway baffle plates should be positioned to divert screenwash flow and debris to West side (discharge canal).

6. All water box outlet valves are jog valves in the closed direction only.

7. This Attachment has been written for backwashing of the Main Condenser only. If another sequence is planned, perform the appropriate Attachment.

8. Conductivity monitoring requires temperature compensation to accurately indicate the process conductivity. This temperature compensation results in a delay in the detection instrumentation circuitry. Therefore, when the process temperature rises (i.e., during a Condenser backwash), conductivity indication will also rise until the temperature compensation circuitry has had sufficient time to correct for the rise in temperature. This response time should be less than 5 minutes. If the rise in conductivity persists or continues to increase, then enter PNPS 2.4.33. Ensure Chemistry is also monitoring similar point(s) on the Chemistry Lab computer. Validate Control Room indications with Chemistry if a chloride intrusion is suspected.

1.0 INITIAL CONDITIONS (Continued)

CAUTIONS

1. When a Condenser quadrant does not have cooling flow, the associated vapor valve to the SJAE must be closed to prevent choking of the SJAE. After cooling flow is restored, the vapor valves may be reopened once sufficient cooling has been established, as evidenced by the outlet temperature of the circulating water being at or near the outlet temperatures of the other in-service quadrants and stable.
2. The presence of intake biofouling by mussels larger than 10 mm increases the potential for significant CWS component blockage should the backwash temperature exceed 75°F.

Initials

[5] **ACTIVATE** the special log on EPIC to run every 5 minutes during the performance of this Attachment and to include the following: _____

- CWS002 - Seawater Pump A Inlet Temp*
- CWS004 - Seawater Pump B Inlet Temp*
- CWS020 - A Seawater Pump Discharge Temperature
- CWS018 - B Seawater Pump Discharge Temperature
- RBC010 - SSW to A Cooling Water Loops
- RBC012 - SSW to B Cooling Water Loops
- CON024 - East Condenser Hotwell Outlet Temperature
- CON026 - West Condenser Hotwell Outlet Temperature
- TUR010 - West Condenser Vacuum
- TUR012 - East Condenser Vacuum
- GEN012 - Stator Cooling Hdr Inlet
- C017M - Core Thermal Power
- PES028 - Generator Gross Power

* If the CW temperature indicators for some reason are not available, then utilize the other available temperature indications and/or computer points that are available in order to satisfy the NPDES permit requirements.

1.0 INITIAL CONDITIONS (Continued)

NOTE

Prior to dispatching an Operator to the Screenhouse, ensure he/she has a copy of Attachment 9 (Condenser Backwash Data Sheet) to record data during the times the screens are operating in the reverse direction.

CAUTIONS

1. When reversing screens for backwashing the Condenser, the screens' two-speed control switches should be placed to the "FAST" (20 FPM) position.
2. The Rear SSW Sluice Gate must be open prior to closing the East or West SSW Sluice Gate.

Initials

[6] **PRIOR** to reducing power for the Main Condenser backwash, **ENSURE** sluice gate alignment by performing the following:

(a) **OPEN/VERIFY OPEN** the Rear SSW Sluice Gate (X-367C). _____

(b) **CLOSE** the East SSW Sluice Gate (X-367A). _____

[7] **SECURE/VERIFY SECURED** SSW and SW hypochlorite injection in accordance with PNPS 2.2.95, *"Chlorination System"*. _____

- **ENSURE** SSW Hypochlorination System status changes are logged in the CRS logbook. _____
- **ENSURE** Chemistry is notified of SSW Hypochlorination System status changes. _____

1.0 INITIAL CONDITIONS (Continued)

CAUTION

Single seawater pump operation at too high of a Reactor power level can cause Main Condenser differential temperatures to exceed the EPA limit of 32°F or Main Condenser vacuum to degrade.

Initials

[8] **REDUCE** Reactor power in accordance with PNPS 2.1.14 to a level acceptable for a backwash as determined by CRS/SM while constantly monitoring Main Condenser vacuum and differential temperatures. _____

[9] **PRIOR** to backwash, **LOWER** hydrogen flow to 5 SCFM in accordance with PNPS 10.2.4. **[CY.3-1]** _____

[10] **RECORD** initial data on Attachment 9 (Condenser Backwash Data Sheet). _____

CAUTION

Opening and/or closing of the Main Condenser Vapor Valves (AO-3703, AO-3704, AO-3710, and AO-3711) can affect dose rates and impact personnel exposure if work is taking place near any offgas process piping (Recombiner Room, Condenser Bay, and AOG 5' elevation).

[11] **PRIOR** to opening/closing any Main Condenser Vapor Valve (AO-3703, AO-3704, AO-3710, and/or AO-3711) in this Attachment, **NOTIFY** Radiation Protection. _____

2.0 BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP A

Initials

[1] **OPERATE** Screenwash System with all available screens running in the forward direction (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation). _____

[2] **PRIOR** to backwash, **RECORD** Circulating Water Pump amps. _____

P-105A amps _____ P-105B amps _____

[3] **OPEN/VERIFY OPEN** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

[4] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

2.0 BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP A (Continued)

NOTE

Steps [5] and [6] must be performed together.

CAUTION

During initial entry into a Main Condenser backwash alignment, Condensate Demineralizer Conductivity HI alarms at Panel C904R may be experienced due to time delays associated with instrument temperature compensation. If the observed conductivity rise persists for greater than 5 minutes, then enter PNPS 2.4.33.

Initials

[5] **CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[6] **WHEN** the first white (12% to 18% OPEN position) light comes on in Step [5], **THEN STOP** Seawater Pump A, P-105A. _____

[7] **IF** Seawater Pump A, P-105A, is required to be isolated, **THEN PERFORM** the following (**IF** not required, **ENTER** "N/P"):

(a) **CLOSE/VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703 _____
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711 _____

(c) **TAG OUT** Seawater Pump A, P-105A. _____

(d) **WHEN** maintenance complete, **DE-TAG** Seawater Pump A, P-105A. _____

2.0 BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP A (Continued)

Initials

[8] **OPERATE** screens C and D on FAST speed in the reverse direction or as directed by the SM. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[9] **OPEN** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[10] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

[11] **OPEN/VERIFY OPEN** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703 _____
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711 _____

BACKWASH IS NOW ESTABLISHED.

[12] **RECORD** Circ Water Pump amps at elapsed times of 15 and 30 minutes. _____

P-105B amps (15 min): _____ (30 min): _____

[13] **BACKWASH** until screens C and D are clean **OR** TI-38016 (A Loop SSW Inlet Temp to RBCCW Ht Ex) or TI-38017 (B Loop SSW Inlet Temp to RBCCW Ht Ex) indicates an SSW Loop temperature of no greater than 74.1°F. _____

[14] **HAVE** the field Operator complete the second half of Attachment 9. _____

2.1 Multiple Backwashes Of The 1-2 And 1-4 Inlet Water Boxes

NOTE

If desired, placing the Condenser into and out of backwash may improve mussel removal from the tube sheet.

Initials

[1] **IF** desired to perform multiple backwash alignments, **THEN PERFORM** the following (**IF** not performed, **ENTER** "N/P"):

(a) **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

(b) **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

(c) **REPEAT** Steps 2.1[1](a) and (b), as necessary, to clean the 1-2 and 1-4 Inlet Water Boxes. _____

2.2 Returning From Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A)

Initials

[1] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

[2] **CLOSE** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[3] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

[4] **STOP** reverse rotation of screens C and D **AND OPERATE** screens C and D in the forward direction. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[5] **IF** Seawater Pump A, P-105A, is required to be isolated, **THEN PERFORM** the following (**IF** not required, **ENTER** "N/P"):

(a) **VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703 _____
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711 _____

(c) **TAG OUT** Seawater Pump A, P-105A. _____

(d) **WHEN** maintenance is complete, **DE-TAG** Seawater Pump A, P-105A. _____

2.2 Returning From Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A) (Continued)

Initials

[6] **OPEN** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[7] **WHEN** either Water Box Inlet Valve MO-3873 **OR** MO-3871 indicates 12 to 18% OPEN, **THEN START** Seawater Pump A, P-105A. _____

[8] **FULLY OPEN/VERIFY OPEN** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[9] **OPEN/VERIFY OPEN** the following Condenser Offgas Vapor Valves:

(a) AO-3703, CNDSR A WEST SIDE OFFGAS VALVE (SV-3703, Water Box 1-2) _____

(b) AO-3710, CNDSR A WEST SIDE OFFGAS VALVE (SV-3710, Water Box 1-1) _____

(c) AO-3704, CNDSR B EAST SIDE OFFGAS VALVE (SV-3704, Water Box 1-3) _____

(d) AO-3711, CNDSR B EAST SIDE OFFGAS VALVE (SV-3711, Water Box 1-4) _____

[10] **ALLOW** all seawater and cooling water temperatures to stabilize before continuing. _____

2.2 Returning From Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A) (Continued)

CAUTION

Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

Initials

[11] **WHEN** notified by the Control Room, **OPEN** the East SSW Sluice Gate (X-367A). _____

[12] **RECORD** Circulating Water Pump amps after backwash. _____

P-105A amps _____ P-105B amps _____

[13] **IF** not continuing to backwash 1-1 and 1-3 Inlet Water Boxes (through Pump B), **THEN PERFORM** the following:

(a) **TERMINATE** the special log. _____

(b) **ATTACH** the special log to this Procedure. _____

(c) **CONTINUE** with Section 4.0 of this Attachment. _____

3.0 BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B

CAUTIONS

1. Failure to do the following step may lead to pump damage as well as loss of cooling water to the RBCCW and TBCCW heat exchangers. Always check from this point on that at least two sluice gates to the SSW Pumps are always open.
2. Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

Initials

[1] **VERIFY OPEN OR OPEN** the Rear SSW Sluice Gate (X-367C). _____

[2] **WHEN** notified by the Control Room, **CLOSE** the West SSW Sluice Gate (X-367B). _____

[3] **OPERATE** Screenwash System with all available screens running in the forward direction (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation). _____

[4] **PRIOR** to backwash, **RECORD** Circulating Water Pump amps. _____

P-105A amps _____ P-105B amps _____

[5] **OPEN/VERIFY OPEN** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

3.0 BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B (Continued)

Initials

[6] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

NOTE

Steps [7] and [8] must be performed together.

CAUTION

During initial entry into a Main Condenser backwash alignment, Condensate Demin Conductivity HI alarms at Panel C904R may be experienced due to time delays associated with instrument temperature compensation. If the observed conductivity rise persists for greater than 5 minutes, then enter PNPS 2.4.33.

[7] **CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[8] **WHEN** the first white (12 to 18% OPEN position) light comes on in Step [7], **THEN STOP** Seawater Pump B, P-105B. _____

3.0 BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B (Continued)

Initials

[9] IF Seawater Pump B, P-105B, is required to be isolated, THEN PERFORM the following (IF not required, ENTER "N/P"):

(a) **CLOSE/VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710 _____
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704 _____

(c) **TAG OUT** Seawater Pump B, P-105B. _____

(d) WHEN maintenance is complete, **DE-TAG** Seawater Pump B, P-105B. _____

[10] **OPERATE** screens A and B on FAST speed in the reverse direction or as directed by the SM. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[11] **OPEN** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[12] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

[13] **OPEN/VERIFY OPEN** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710 _____
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704 _____

BACKWASH IS NOW ESTABLISHED.

3.0 BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B (Continued)

Initials

[14] **RECORD** Circ Water Pump amps at elapsed times of 15 and 30 minutes. _____

P-105A amps (15 min): _____ (30 min):_____

[15] **BACKWASH** until screens A and B are clean **OR** TI-38016 (A Loop SSW Inlet Temp to RBCCW Ht Ex) or TI-38017 (B Loop SSW Inlet Temp to RBCCW Ht Ex) indicates SSW loop temperatures of no greater than 74.1°F. _____

[16] **HAVE** the field Operator complete the second half of Attachment 9 (Condenser Backwash Data Sheet). _____

3.1 Multiple Backwashes of the 1-1 and 1-3 Inlet Water Boxes

NOTE

If desired, placing the Condenser into and out of backwash may improve mussel removal from the tube sheet.

[1] **IF** desired to perform multiple backwash alignments, **THEN PERFORM** the following (**IF** not performed, **ENTER** "N/P"):

(a) **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

(b) **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

(c) **REPEAT** Steps 3.1[1](a) and (b), as necessary, to clean the 1-1 and 1-3 Inlet Water Boxes. _____

3.2 Returning from Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump B)

Initials

[1] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

[2] **CLOSE** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[3] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

[4] **STOP** reverse rotation of screens A and B **AND** **OPERATE** screens A and B in forward direction. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[5] **IF** Seawater Pump B, P-105B, is required to be isolated, **THEN** **PERFORM** the following (**IF** not required, **ENTER** "N/P"):

(a) **VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710. _____
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704. _____

3.2 Returning from Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump B) (Continued)

Initials

(c) **TAG OUT** Seawater Pump B, P-105B. _____

(d) **WHEN** maintenance is complete, **DE-TAG** Seawater Pump B, P-105B. _____

[6] **OPEN** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[7] **WHEN** either Water Box Inlet Valve MO-3872 **OR** MO-3870 indicates 12 to 18% OPEN, **THEN START** Seawater Pump B, P-105B. _____

[8] **FULLY OPEN/VERIFY OPEN** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[9] **OPEN/VERIFY OPEN** the following Condenser Offgas Vapor Valves:

(a) AO-3703, CNDSR A WEST SIDE OFFGAS VALVE (SV-3703, Water Box 1-2) _____

(b) AO-3710, CNDSR A WEST SIDE OFFGAS VALVE (SV-3710, Water Box 1-1) _____

(c) AO-3704, CNDSR B EAST SIDE OFFGAS VALVE (SV-3704, Water Box 1-3) _____

(d) AO-3711, CNDSR B EAST SIDE OFFGAS VALVE (SV-3711, Water Box 1-4) _____

[10] **ALLOW** all seawater and cooling water temperature to stabilize before continuing. _____

3.2 Returning from Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump B) (Continued)

CAUTION

Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

Initials

[11] **WHEN** notified by the Control Room, **OPEN** West SSW Sluice Gate (X-367B). _____

[12] **RECORD** Circulating Water Pump amps after backwash. _____

P-105A amps _____ P-105B amps _____

[13] **TERMINATE** special log **AND ATTACH** it to this Procedure. _____

[14] **CONTINUE** with Section 4.0 of this Attachment. _____

4.0 SEAWATER SYSTEM BACKWASH RESTORATION

Initials

[1] **CLOSE** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

[2] **ALIGN/VERIFY ALIGNED** the SSW sluice gates as follows:

(a) West Sluice Gate (X-376B) OPEN _____

(b) East Sluice Gate (X-376A) OPEN _____

(c) Rear Sluice Gate (X-376C) CLOSED _____

[3] **OPEN/VERIFY OPEN** the following valves:

- 27-HO-3, Scavenger Line from Condenser 1-1 Outlet Water Box Block Valve _____
- 27-HO-4, Scavenger Line from Condenser 1-2 Outlet Water Box Block Valve _____
- 27-HO-7, Scavenger Line from Condenser 1-3 Outlet Water Box Block Valve. _____
- 27-HO-8, Scavenger Line from Condenser 1-4 Outlet Water Box Block Valve. _____
- 27-HO-9, Scavenger Line to Water Box Vacuum Control Tank Block Valve. _____

[4] **PLACE** the SSW **AND** SW Hypochlorination System in service in accordance with PNPS 2.2.95. _____

- **ENSURE** SSW Hypochlorination System status changes are logged in the CRS logbook. _____
- **ENSURE** Chemistry is notified of SSW Hypochlorination System status changes. _____

[5] **CLEAR** the Caution Tag on the hydrogen controller in service **AND RESTORE** hydrogen injection flow to normal in accordance with PNPS 10.2.4. _____

4.0 SEAWATER SYSTEM BACKWASH RESTORATION (Continued)

Initials

[6] **PERFORM** Attachment 13 (Seawater System Backwash Restoration Verification) **AND ATTACH** to this Procedure. _____

[7] **VERIFY** the following:

(a) Backwash complete. _____

(b) Screenwash System returned to Normal/Standby lineup. _____

(c) Hypochlorination System in service in accordance with PNPS 2.2.95. _____

(d) Attachment 8/Special Log reviewed and attached. _____

(e) All required data has been recorded on the appropriate copies of Attachment 9 and attached. _____

(f) Hydrogen injection restored to normal flow rate. _____

(g) Attachment 13 (Seawater System Backwash Restoration Verification) complete. _____

(h) Attachment 3 (Backwashing of the Main Condenser) complete. _____

[8] Backwash completed and all Attachments/Special Log reviewed.

_____ _____
On-Shift SRO Date

[9] **FORWARD** a copy of this Attachment and all Attachment 9 forms to the Mechanical/Civil/Structural Engineering System Engineer. _____
OA Init.

THERMAL BACKWASH OF THE MAIN CONDENSER (BACKWASH 'B', THERMAL 'A', THERMAL 'B')

1.0 INITIAL CONDITIONS

[1] **PERFORM** a Pre-Evolution Brief Checklist in accordance with Section 6.10 of PNPS 1.3.34. Below is a list of items that should be covered during the Pre-Evolution Brief.

(a) Appropriate groups notified - Radiation Protection/Chemistry/ISO New England.

(b) Review all Precautions and Limitations in base document Section 5.0 of this Procedure.

(c) Human performance tools including robust barriers are utilized throughout the evolution.

(d) Reactor water level responsibility assigned.

(e) The proper Attachment of this Procedure for the planned evolution has been identified and personnel in the field have a copy.

(f) Communications between the Control Room and field Operators can be established - field Operators have headsets, if required.

(g) Sluice gates are properly aligned and previously exercised.

(h) Condenser vacuum is monitored throughout backwash.

(i) Speed Load Changer is adjusted as necessary in accordance with PNPS 2.1.14.

(j) Feedwater heater levels are monitored.

(k) Line of communication with divers, if applicable.

(l) Sluiceway aligned to discharge canal.

(m) Maintain Main Condenser ΔT's within limits. (Refer to base document Section 5.2 of this Procedure.)

(n) Maximum discharge temp of 118°F (120°F EPA limit).

(o) Maximum hotwell temp of 120°F.

1.0 INITIAL CONDITIONS (Continued)

[2] Proper notifications made in accordance with PNPS 1.3.12 and permission to begin backwash granted.

_____
Shift Manager Date

[3] **VERIFY** Attachment 1 (Condenser Backwash Alignments and Prerequisites) has been completed.

_____
Shift Manager Date

[4] Personnel assigned to perform steps within this Attachment have read the applicable sections/steps and understand their required involvement. All personnel (i.e., Operations, Maintenance) who will complete procedural steps must print their name and sign their initials below.

Name (print)	Initials	Name (print)	Initials
Name (print)	Initials	Name (print)	Initials
Name (print)	Initials	Name (print)	Initials
Name (print)	Initials	Name (print)	Initials

1.0 INITIAL CONDITIONS (Continued)

NOTES

1. Every attempt should be made to perform thermal backwashing during higher tide levels. If not performed at higher tide levels, elevated SSW temperatures may occur.
2. When a decision has been made to backwash the Main Condenser using the heat treating process, notify the PNPS Environmental Department when REMVEC is notified so that the appropriate biologist divers can be alerted to be on-site when needed for postbackwash inspection.
3. Perform only those sections necessary for the backwash evolution planned. Steps in sections not performed may be omitted by placing "N/P" and CRS initialing in the initial block. (Refer to PNPS 1.3.34.)
4. Attachment 1 (Condenser Backwash Alignments and Prerequisites) has been completed.
5. When complete, Attachment 4 shall be filed in the Control Room Annex files.
6. Special Log will be attached to this Procedure upon completion.
7. For Condenser backwashing, sluiceway baffle plates should be positioned to divert screenwash flow and debris to west side (discharge canal).
8. All water box outlet valves are jog valves in the closed direction only.
9. This Attachment has been written to stand on its own for a Main Condenser thermal backwash. If another sequence is planned, perform the appropriate Attachment.
10. Conductivity monitoring requires temperature compensation to accurately indicate the process conductivity. This temperature compensation results in a delay in the detection instrumentation circuitry. Therefore, when the process temperature rises (i.e., during a Condenser backwash), conductivity indication will also rise until the temperature compensation circuitry has had sufficient time to correct for the rise in temperature. This response time should be less than 5 minutes. If the rise in conductivity persists or continues to increase, then enter PNPS 2.4.33. Ensure Chemistry is also monitoring similar point(s) on the Chemistry Lab computer. Validate Control Room indications with Chemistry if a chloride intrusion is suspected.

1.0 INITIAL CONDITIONS (Continued)

CAUTIONS

1. When a Condenser quadrant does not have cooling flow, the associated vapor valve to the SJAE must be closed to prevent choking of the SJAE. After cooling flow is restored, the vapor valves may be reopened once sufficient cooling has been established, as evidenced by the outlet temperature of the circulating water being at or near the outlet temperatures of the other in-service quadrants and stable.
2. Large quantities of mussels greater than 10 mm in length on intake surface should be mechanically removed prior to any backwash with temperature exceeding 75°F. Higher temperatures may kill attached mussels causing them to become detached and resulting in significant Condenser plugging.
3. Operating with Condenser vacuum ≤ 26" Hg for greater than 1 hour can cause water problems with the AOG System and the SJAE Radiation Monitors.

[5] **ACTIVATE** the special log on EPIC to run every 5 minutes during the performance of this Attachment and to include the following:

Point*		Backwashing through "B" Seawater Pump DO NOT EXCEED	Backwashing through "A" Seawater Pump DO NOT EXCEED
CWS002	A Seawater Pp Inlet Temp***	Ambient +5°F or 74.1°F	N/A ****
CWS004	B Seawater Pp Inlet Temp***	N/A ****	Ambient +5°F or 74.1°F
CWS020	A Seawater Pp Disch Temp	Ambient +5°F or 74.1°F	118°F
CWS018	B Seawater Pp Disch Temp	118°F	Ambient +5°F or 74.1°F
RBC010	SSW to A Cooling Water Loops	74.1°F	74.1°F
RBC012	SSW to B Cooling Water Loops	74.1°F	74.1°F
CON024	E. Condenser Hotwell Outlet Temp	120°F	120°F
CON026	W. Condenser Hotwell Outlet Temp	120°F	120°F
TUR010	W. Condenser Press	4.0" Hg **	4.0" Hg**
TUR012	E. Condenser Press	4.0" Hg **	4.0" Hg**

1.0 INITIAL CONDITIONS (Continued)

Point*		Backwashing through "B" Seawater Pump DO NOT EXCEED	Backwashing through "A" Seawater Pump DO NOT EXCEED
GEN012	Stator Cooling Inlet to Cooler	80°C	80°C
C017M	Core Thermal Power	N/A	N/A
PES028	Generator Gross Power	N/A	N/A

* Add any other points for components in alarm.
** Alternatively use recorder on Panel C1 if these points are unreliable.
*** If the CW temperature indicators for some reason are not available, then utilize the other available temperature indications and/or computer points that are available in order to satisfy the NPDES permit requirements.
**** Instrument range 30°F to 110°F.

_____
Initials

NOTE

Prior to dispatching an Operator to the Screenhouse, ensure he has a copy of Attachment 9 (Condenser Backwash Data Sheet) to record data during the times the screens are operating in the reverse direction.

CAUTIONS

1. When reversing screens for backwashing the Condenser, the screens' two-speed control switches should be placed to the "FAST" (20 FPM) position.
2. The Rear SSW Sluice Gate must be open prior to closing the East or West SSW Sluice Gate.

Initials

[6] **PRIOR** to reducing power for the Main Condenser thermal backwash, **ENSURE** sluice gate alignment by performing the following:

(a) **OPEN/VERIFY OPEN** the Rear SSW Sluice Gate (X-367C). _____

(b) **CLOSE** the West SSW Sluice Gate (X-367B). _____

1.0 INITIAL CONDITIONS (Continued)

Initials

[7] **PRIOR** to backwash, **ENSURE** Chemistry has performed an ambient pH analysis of Seawater Intake for the NPDES permit. _____

[8] **SECURE/VERIFY SECURED** SSW and SW hypochlorite injection in accordance with PNPS 2.2.95, *"Chlorination System"*. _____

- **ENSURE** SSW Hypochlorination System status changes are logged in the CRS logbook. _____
- **ENSURE** Chemistry is notified of SSW Hypochlorination System status changes. _____

CAUTION

Single seawater pump operation at too high of a Reactor power level can cause Main Condenser differential temperatures to exceed the EPA limit of 32°F or Main Condenser vacuum to degrade.

[9] **REDUCE** Reactor power in accordance with PNPS 2.1.14 to a level acceptable for a backwash as determined by CRS/SM while constantly monitoring Main Condenser vacuum and differential temperatures. _____

[10] **PRIOR** to backwash, **LOWER** hydrogen flow to 5 SCFM in accordance with PNPS 10.2.4. **[CY.3-1]** _____

[11] **RECORD** initial data on Attachment 9 (Condenser Backwash Data Sheet). _____

CAUTION

Opening and/or closing of the Main Condenser Vapor Valves (AO-3703, AO-3704, AO-3710, and AO-3711) can affect dose rates and impact personnel exposure if work is taking place near any offgas process piping (Recombiner Room, Condenser Bay, and AOG 5' elevation).

[12] **PRIOR** to opening/closing any Main Condenser Vapor Valve (AO-3703, AO-3704, AO-3710, and/or AO-3711) in this Attachment, **NOTIFY** Radiation Protection. _____

2.0 BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B

Initials

[1] **OPERATE** Screenwash System with all available screens running in the forward direction (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation. _____

[2] **PRIOR** to backwash, **RECORD** Circulating Water Pump amps. _____

P-105A amps _____ P-105B amps _____

[3] **OPEN/VERIFY OPEN** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

[4] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet valve) _____

2.0 BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B (Continued)

NOTE

Steps [5] and [6] must be performed together.

CAUTION

During initial entry into a Main Condenser backwash alignment, Condensate Demineralizer Conductivity HI alarms at Panel C904R may be experienced due to time delays associated with instrument temperature compensation. If the observed conductivity rise persists for greater than 5 minutes, then enter PNPS 2.4.33.

Initials

[5] **CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[6] **WHEN** the first white light (12 to 18% OPEN position) comes on in Step [5], **THEN STOP** Seawater Pump B, P-105B. _____

[7] **IF** Seawater Pump B, P-105B, is required to be isolated, **THEN PERFORM** the following (**IF** not required, **ENTER** N/P"):

(a) **CLOSE/VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710 _____
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704 _____

(c) **TAG OUT** Seawater Pump B, P-105B. _____

(d) **WHEN** maintenance is complete, **DE-TAG** Seawater Pump B, P-105B. _____

2.0 BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B (Continued)

Initials

[8] **OPERATE** screens A and B on FAST speed in the reverse direction or as directed by the SM. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[9] **OPEN** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[10] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

[11] **OPEN/VERIFY OPEN** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710 _____
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704 _____

BACKWASH IS NOW ESTABLISHED.

[12] **RECORD** Circulating Water Pump amps at elapsed times of 15 and 30 minutes. _____

P-105A (15 min): _____ (30 min): _____

[13] **BACKWASH** until screens A and B are clean **OR** TI-38016 (A Loop SSW Inlet Temp to RBCCW Ht Ex) or TI-38017 (B Loop SSW Inlet Temp to RBCCW Ht Ex) indicates salt service loop temperatures of no greater than 74.1°F. _____

[14] **HAVE** the field Operator complete the second half of Attachment 9 (Condenser Backwash Data Sheet). _____

2.1 Returning from Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump B)

Initials

[1] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

[2] **CLOSE** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[3] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

[4] **STOP** reverse rotation of screens A and B **AND** **OPERATE** screens A and B in forward direction. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[5] **OPEN** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[6] **WHEN** either Water Box Inlet Valve MO-3872 **OR** MO-3870 indicates 12 to 18% OPEN, **THEN START** Seawater Pump B, P-105B. _____

[7] **FULLY OPEN/VERIFY OPEN** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

2.1 Returning from Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump B) (Continued)

Initials

[8] **ALLOW** all seawater and cooling water temperatures to stabilize before continuing. _____

CAUTION

Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

[9] **WHEN** notified by Control Room, **OPEN** West SSW Sluice Gate (X-367B). _____

[10] **RECORD** Circulating Water Pump amps after backwash. _____

P-105A amps _____ P-105B amps _____

3.0 THERMAL BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP "A" - HEAT TREATING

CAUTIONS

1. Failure to do the following step may lead to pump damage as well as loss of cooling water to the RBCCW and TBCCW heat exchangers. Always verify from this point on that at least two sluice gates to the SSW Pumps are always open.

2. Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

Initials

[1] **VERIFY OPEN OR OPEN** the Rear SSW Sluice Gate (X-367C). _____

[2] **WHEN** notified by the Control Room, **CLOSE** the East SSW Sluice Gate (X-367A). _____

[3] **OPERATE** Screenwash System with all available screens running in the forward direction (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation). _____

[4] **PRIOR** to backwash, **RECORD** Circulating Water Pump amps. _____

P-105A amps _____ P-105B amps _____

[5] **OPEN/VERIFY OPEN** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

3.0 THERMAL BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP "A" - HEAT TREATING (Continued)

Initials

[6] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

NOTE

Steps [7] and [8] must be performed together.

CAUTION

During initial entry into a Main Condenser backwash alignment, Condensate Demineralizer Conductivity HI alarms at Panel C904R may be experienced due to time delays associated with instrument temperature compensation. If the observed conductivity rise persists for greater than 5 minutes, then enter PNPS 2.4.33.

[7] **CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[8] **WHEN** the first white light (12 to 18% OPEN position) comes on in Step [7], **THEN STOP** Seawater Pump A, P-105A. _____

3.0 THERMAL BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP "A" - HEAT TREATING (Continued)

Initials

[9] IF Seawater Pump A, P-105A, is required to be isolated, THEN **PERFORM** the following (IF not required, **ENTER** "N/P"):

(a) **CLOSE/VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703 _____
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711 _____

(c) **TAG OUT** Seawater Pump A, P-105A. _____

(d) WHEN maintenance is complete, **DE-TAG** Seawater Pump A, P-105A. _____

[10] **OPERATE** screens C and D on FAST speed in the reverse direction or as directed by the SM. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[11] **OPEN** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[12] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

3.0 THERMAL BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP "A" - HEAT TREATING (Continued)

Initials

[13] **OPEN/VERIFY OPEN** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3803 _____
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711 _____

BACKWASH IS NOW ESTABLISHED.

[14] **NOTIFY** Chemistry to perform a pH analysis of the Seawater Intake during a thermal backwash for the NPDES permit. _____

NOTES

1. EPA NPDES Permit limit for thermal backwash discharge at intake is 120°F for no more than 3 hours duration twice per week.
2. Points can also be checked on TSU-3400 on Panel C4.

CAUTIONS

1. While backwashing at this elevated temperature, check that the outlet temperature from Seawater Pump "A" (CWS002 and/or CWS020) does not exceed 118°F or increase to a point where vacuum could deteriorate to below 26" Hg. Increases in the inlet temperature to the active SSW bay (TI-38017) and in-service Seawater Pump (CWS018/CWS004) should not exceed 5°F over prebackwash ambient temperature or a maximum of 74.1°F.
2. Operating with Condenser vacuum ≤ 26" Hg for greater than 1 hour can cause water problems with the AOG System and the SJAE Radiation Monitors.

[15] **CAUTIOUSLY INCREASE** Reactor power to raise outlet temperature of "A" Pump (CWS002 and/or CWS020) to between 105°F and 118°F. _____

(a) **CLOSELY MONITOR** Condenser vacuum **AND TERMINATE** power increase when vacuum starts decreasing so as not to reduce vacuum below 26" Hg. _____

3.0 THERMAL BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP "A" - HEAT TREATING (Continued)

Initials

[16] **RECORD** Circulating Water Pump amps at elapsed times of 15 and 30 minutes. _____

P-105B amps (15 min): _____ (30 min): _____

[17] **BACKWASH** until screens C and D are clean with no debris coming over the screens and point CWS020 or CWS002 indicates a temperature of between 105°F and 118°F for at least 30 minutes. (**REFER TO** Attachment 12.) _____

[18] **HAVE** the field Operator complete the second half of Attachment 9 (Condenser Backwash Data Sheet). _____

[19] **WHEN** backwash is complete, **THEN REDUCE** Reactor power in accordance with PNPS 2.1.14 to a level acceptable for returning from backwash as determined by the CRS/SM while constantly monitoring Main Condenser vacuum. _____

3.1 Multiple Backwashes of the 1-2 and 1-4 Inlet Water Boxes

NOTE

If desired, placing the Condenser into and out of backwash may improve mussel removal from the tube sheet.

Initials

[1] **IF** desired to perform multiple backwash alignments, **THEN PERFORM** the following (**IF** not performed, **ENTER** "N/P"):

(a) **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

(b) **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

(c) **REPEAT** Steps 3.1[1](a) and (b), as necessary, to clean the 1-2 and 1-4 Inlet Water Boxes. _____

3.2 Returning Thermal Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A)

Initials

[1] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

[2] **CLOSE** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[3] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

[4] **STOP** reverse rotation of screens C and D **AND** **OPERATE** screens C and D in the forward direction. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[5] **IF** Seawater Pump A, P-105A, is required to be isolated, **THEN** **PERFORM** the following (**IF** not required, **ENTER** "N/P"):

(a) **VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703 _____
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711 _____

(c) **TAG OUT** Seawater Pump A, P-105A. _____

3.2 Returning Thermal Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A) (Continued)

Initials

(d) **WHEN** maintenance is complete, **DE-TAG** Seawater Pump A, P-105A. _____

[6] **OPEN** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[7] **WHEN** either Water Box Inlet Valve MO-3873 **OR** MO-3871 indicates 12 to 18% OPEN, **THEN START** Seawater Pump A, P-105A. _____

[8] **FULLY OPEN/VERIFY OPEN** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[9] **OPEN/VERIFY OPEN** the following Condenser Offgas Vapor Valves:

(a) AO-3703, CNDSR A WEST SIDE OFFGAS VALVE (SV-3703, Water Box 1-2) _____

(b) AO-3710, CNDSR A WEST SIDE OFFGAS VALVE (SV-3710, Water Box 1-1) _____

(c) AO-3704, CNDSR B EAST SIDE OFFGAS VALVE (SV-3704, Water Box 1-3) _____

(d) AO-3711, CNDSR B EAST SIDE OFFGAS VALVE (SV-3711, Water Box 1-4) _____

[10] **ALLOW** all seawater and cooling water temperatures to stabilize before continuing. _____

3.2 Returning Thermal Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A) (Continued)

CAUTION

Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

Initials

[11] **WHEN** notified by the Control Room, **OPEN** East SSW Sluice Gate (X-367A). _____

[12] **RECORD** Circulating Water Pump amps after backwash. _____

P-105A amps _____ P-105B amps _____

[13] **IF** not continuing with the thermal backwash of 1-1 and 1-3 Inlet Water Boxes (through Pump B), **THEN PERFORM** the following:

(a) **TERMINATE** the special log. _____

(b) **ATTACH** the special log to this Procedure. _____

(c) **CONTINUE** with Section 5.0 of this Attachment. _____

4.0 THERMAL BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B - HEAT TREATING

CAUTIONS

1. Failure to do the following step may lead to pump damage as well as loss of cooling water to the RBCCW and TBCCW heat exchangers. Always check from this point on that at least two sluice gates to the SSW Pumps are always open.
2. Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

Initials

[1] **VERIFY OPEN OR OPEN** the Rear SSW Sluice Gate (X-367C). _____

[2] **WHEN** notified by the Control Room, **CLOSE** the West SSW Sluice Gate (X-367B). _____

[3] **OPERATE** Screenwash System with all available screens running in the forward direction (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation). _____

[4] **PRIOR** to backwash, **RECORD** Circulating Water Pump amps. _____

P-105A amps _____ P-105B amps _____

[5] **OPEN/VERIFY OPEN** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

4.0 THERMAL BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B - HEAT TREATING (Continued)

Initials

[6] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

NOTE

Steps [7] and [8] must be performed together.

CAUTION

During initial entry into a Main Condenser backwash alignment, Condensate Demineralizer Conductivity HI alarms at Panel C904R may be experienced due to time delays associated with instrument temperature compensation. If the observed conductivity rise persists for greater than 5 minutes, then enter PNPS 2.4.33.

[7] **CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[8] **WHEN** the first white light (12 to 18% OPEN position) comes on in Step [7], **THEN STOP** Seawater Pump B, P-105B. _____

4.0 THERMAL BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B - HEAT TREATING (Continued)

Initials

[9] IF Seawater B, P-105B, is required to be isolated, THEN PERFORM the following (IF not required, ENTER "N/P"):

(a) **CLOSE/VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710 _____
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704 _____

(c) **TAG OUT** Seawater Pump B, P-105B. _____

(d) WHEN maintenance is complete, **DE-TAG** Seawater Pump B, P-105B. _____

[10] **OPERATE** screens A and B on FAST speed in the reverse direction or as directed by the SM. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[11] **OPEN** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[12] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

4.0 THERMAL BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B - HEAT TREATING (Continued)

Initials

[13] **OPEN** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710 _____
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704 _____

BACKWASH IS NOW ESTABLISHED.

[14] **NOTIFY** Chemistry to perform a pH analysis of the Seawater Intake during a thermal backwash for the NPDES permit. _____

NOTES

1. EPA NPDES Permit limit for thermal backwash discharge at intake is 120°F for no more than 3 hours duration twice per week.
2. Points can also be checked on TSU-3400 on Panel C4.

CAUTIONS

1. While backwashing at this elevated temperature, check that the outlet temperature from Seawater Pump B (CWS018/CWS004) does not exceed 118°F or increase to a point where vacuum could deteriorate to below 26" Hg. Increase in the inlet temperature to the active SSW bay (TI-38016) and in-service Seawater Pump (CWS002/CWS020) should not exceed 5°F over prebackwash ambient or a maximum of 74.1°F.
2. Operating with Condenser vacuum ≤ 26" Hg for greater than 1 hour can cause water problems with the AOG System and the SJAE Radiation Monitors.

[15] **CAUTIOUSLY INCREASE** Reactor power to raise outlet temperature of "B" Pump (CWS018 and/or CWS004) to between 105°F and 118°F. _____

(a) **CLOSELY MONITOR** Condenser vacuum **AND TERMINATE** power increase when vacuum starts decreasing so as not to reduce vacuum below 26" Hg. _____

4.0 THERMAL BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B - HEAT TREATING (Continued)

Initials

[16] **RECORD** Circulating Water Pump amps at elapsed times of 15 and 30 minutes. _____

P-105A amps (15 min): _____ (30 min): _____

[17] **BACKWASH** until screens A and B are clean with no debris coming over the screens and point CWS018 or CWS004 indicates a temperature between 105°F and 118°F for at least 30 minutes. (**REFER TO** Attachment 12.) _____

[18] **HAVE** the field Operator complete the second half of Attachment 9 (Condenser Backwash Data Sheet). _____

[19] **WHEN** backwash is complete, **THEN REDUCE** Reactor power in accordance with PNPS 2.1.14 to a level acceptable for returning from backwash as determined by the CRS/SM while constantly monitoring Main Condenser vacuum. _____

4.1 Multiple Backwashes of the 1-1 and 1-3 Inlet Water Boxes

NOTE

If desired, placing the Condenser into and out of backwash may improve mussel removal from the tube sheet.

Initials

[1] **IF** desired to perform multiple backwash alignments, **THEN PERFORM** the following (**IF** not performed, **ENTER** "N/P"):

(a) **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

(b) **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

(c) **REPEAT** Steps 4.1[1](a) and (b), as necessary, to clean the 1-1 and 1-3 Inlet Water Boxes. _____

4.2 Returning from Thermal Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump A)

Initials

[1] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

[2] **CLOSE** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[3] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

[4] **STOP** reverse rotation of screens A and B **AND** **OPERATE** screens A and B in forward direction. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[5] **IF** Seawater Pump B, P-105B, is required to be isolated, **THEN** **PERFORM** the following (**IF** not required, **ENTER** "N/P"):

(a) **VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710 _____
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704 _____

4.2 Returning from Thermal Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump A) (Continued)

Initials

(c) **TAG OUT** Seawater Pump B, P-105B. _____

(d) **WHEN** maintenance is complete, **DE-TAG** Seawater Pump B, P-105B. _____

[6] **OPEN** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[7] **WHEN** either Water Box Inlet Valve MO-3872 **OR** MO-3870 indicates 12 to 18% OPEN, **THEN START** Seawater Pump B, P-105B. _____

[8] **FULLY OPEN/VERIFY OPEN** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[9] **OPEN/VERIFY OPEN** the following Condenser Offgas Vapor Valves:

(a) AO-3703, CNDSR A WEST SIDE OFFGAS VALVE (SV-3703, Water Box 1-2) _____

(b) AO-3710, CNDSR A WEST SIDE OFFGAS VALVE (SV-3710, Water Box 1-1) _____

(c) AO-3704, CNDSR B EAST SIDE OFFGAS VALVE (SV-3704, Water Box 1-3) _____

(d) AO-3711, CNDSR B EAST SIDE OFFGAS VALVE (SV-3711, Water Box 1-4) _____

4.2 Returning from Thermal Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump A) (Continued)

Initials

[10] **ALLOW** all seawater and cooling water temperatures to stabilize before continuing. _____

CAUTION

Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

[11] **WHEN** notified by the Control Room, **OPEN** West SSW Sluice Gate (X-367B). _____

[12] **RECORD** Circulating Water Pump amps after backwash. _____

P-105A amps _____ P-105B amps _____

[13] **TERMINATE** special log **AND ATTACH** it to this Procedure. _____

[14] **CONTINUE** with Section 5.0 of this Attachment. _____

5.0 SEAWATER SYSTEM THERMAL BACKWASH RESTORATION

Initials

[1] **CLOSE** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

[2] **ALIGN/VERIFY ALIGNED** the SSW sluice gates as follows:

(a) West Sluice Gate (X-376B) OPEN _____

(b) East Sluice Gate (X-376A) OPEN _____

(c) Rear Sluice Gate (X-376C) CLOSED _____

[3] **OPEN/VERIFY OPEN** the following valves:

- 27-HO-3, Scavenger Line from Condenser 1-1 Outlet Water Box Block Valve _____
- 27-HO-4, Scavenger Line from Condenser 1-2 Outlet Water Box Block Valve _____
- 27-HO-7, Scavenger Line from Condenser 1-3 Outlet Water Box Block Valve _____
- 27-HO-8, Scavenger Line from Condenser 1-4 Outlet Water Box Block Valve _____
- 27-HO-9, Scavenger to Water Box Vacuum Control Tank Block Valve _____

[4] **PLACE** the SSW **AND** SW Hypochlorination System in service in accordance with PNPS 2.2.95. _____

- **ENSURE** SSW Hypochlorination System status changes are logged in the CRS logbook. _____
- **ENSURE** Chemistry is notified of SSW Hypochlorination System status changes. _____

[5] **CLEAR** the Caution Tag on the hydrogen controller in service **AND RESTORE** hydrogen injection flow to normal in accordance with PNPS 10.2.4. _____

5.0 SEAWATER SYSTEM THERMAL BACKWASH RESTORATION (Continued)

Initials

[6] **PERFORM** Attachment 13 (Seawater System Backwash Restoration Verification) **AND ATTACH** to this Procedure. _____

[7] **VERIFY** the following:

(a) Backwash complete. _____

(b) Screenwash System returned to Normal/Standby lineup. _____

(c) Hypochlorination System in service in accordance with PNPS 2.2.95. _____

(d) Attachment 8/Special Log reviewed and attached. _____

(e) All required data has been recorded on the appropriate copies of Attachment 9 and attached. _____

(f) Hydrogen injection restored to normal flow rate. _____

(g) Attachment 13 (Seawater System Backwash Restoration Verification) complete. _____

(h) Attachment 4 (Thermal Backwash of the Main Condenser) complete. _____

[8] Backwash completed and all Attachments/Special Log reviewed.

_____ _____
On-Shift SRO Date

[9] **FORWARD** a copy of this Attachment and all Attachment 9 forms to the Mechanical/Civil/Structural Engineering System Engineer.

_____
OA Init.

THERMAL BACKWASH OF THE MAIN CONDENSER (BACKWASH 'A', THERMAL 'B', THERMAL 'A')

1.0 INITIAL CONDITIONS

[1] **PERFORM** a Pre-Evolution Brief Checklist in accordance with Section 6.10 of PNPS 1.3.34. Below is a list of items that should be covered during the Pre-Evolution Brief.

(a) Appropriate groups notified - Radiation Protection/Chemistry/ISO New England.

(b) Review all Precautions and Limitations in base document Section 5.0 of this Procedure.

(c) Human performance tools including robust barriers are utilized throughout the evolution.

(d) Reactor water level responsibility assigned.

(e) The proper Attachment of this Procedure for the planned evolution has been identified and personnel in the field have a copy.

(f) Communications between the Control Room and field Operators can be established - field Operators have headsets, if required.

(g) Sluice gates are properly aligned and previously exercised.

(h) Condenser vacuum is monitored throughout backwash.

(i) Speed Load Changer is adjusted as necessary in accordance with PNPS 2.1.14.

(j) Feedwater heater levels are monitored.

(k) Line of communication with divers, if applicable.

(l) Sluiceway aligned to discharge canal.

(m) Maintain Main Condenser ΔT's within limits. (Refer to base document Section 5.2 of this Procedure.)

(n) Maximum discharge temp of 118°F (120°F EPA limit).

(o) Maximum hotwell temp of 120°F.

1.0 INITIAL CONDITIONS (Continued)

[2] Proper notifications made in accordance with PNPS 1.3.12 and permission to begin backwash granted.

_____
Shift Manager Date

[3] Attachment 1 (Condenser Backwash Alignments and Prerequisites) has been completed.

_____
Shift Manager Date

[4] Personnel assigned to perform steps within this Attachment have read the applicable sections/steps and understand their required involvement. All personnel (i.e., Operations, Maintenance) who will complete procedural steps must print their name and sign their initials below.

Name (print)	Initials	Name (print)	Initials
Name (print)	Initials	Name (print)	Initials
Name (print)	Initials	Name (print)	Initials
Name (print)	Initials	Name (print)	Initials

1.0 INITIAL CONDITIONS (Continued)

NOTES

1. Every attempt should be made to perform thermal backwashing during higher tide levels. If not performed at higher tide levels, elevated SSW temperatures may occur.
2. When a decision has been made to backwash the Main Condenser using the heat treating process, notify the PNPS Environmental Department when REMVEC is notified so that the appropriate biologist divers can be alerted to be on-site when needed for postbackwash inspection.
3. Perform only those sections necessary for the backwash evolution planned. Steps in sections not performed may be omitted by placing "N/P" and CRS initialing in the initial block. (Refer to PNPS 1.3.34.)
4. Attachment 1 (Condenser Backwash Alignments and Prerequisites) has been completed.
5. When complete, Attachment 5 shall be filed in the Control Room Annex files.
6. Special Log will be attached to this Procedure upon completion.
7. For Condenser backwashing, sluiceway baffle plates should be positioned to divert screenwash flow and debris to west side (discharge canal).
8. All water box outlet valves are jog valves in the closed direction only.
9. This Attachment has been written to stand on its own for a Main Condenser thermal backwash. If another sequence is planned, perform the appropriate Attachment.
10. Conductivity monitoring requires temperature compensation to accurately indicate the process conductivity. This temperature compensation results in a delay in the detection instrumentation circuitry. Therefore, when the process temperature rises (i.e., during a Condenser backwash), conductivity indication will also rise until the temperature compensation circuitry has had sufficient time to correct for the rise in temperature. This response time should be less than 5 minutes. If the rise in conductivity persists or continues to increase, then enter PNPS 2.4.33. Ensure Chemistry is also monitoring similar point(s) on the Chemistry Lab computer. Validate Control Room indications with Chemistry if a chloride intrusion is suspected.

1.0 INITIAL CONDITIONS (Continued)

CAUTIONS

1. When a Condenser quadrant does not have cooling flow, the associated vapor valve to the SJAE must be closed to prevent choking of the SJAE. After cooling flow is restored, the vapor valves may be reopened once sufficient cooling has been established, as evidenced by the outlet temperature of the circulating water being at or near the outlet temperatures of the other in-service quadrants and stable.
2. Large quantities of mussels greater than 10 mm in length on intake surface should be mechanically removed prior to any backwash with temperature exceeding 75°F. Higher temperatures may kill attached mussels causing them to become detached and resulting in significant Condenser plugging.
3. Operating with Condenser vacuum ≤ 26" Hg for greater than 1 hour can cause water problems with the AOG System and the SJAE Radiation Monitors.

[5] **ACTIVATE** the special log on EPIC to run every 5 minutes during the performance of this Attachment and to include the following:

Point*		Backwashing through "B" Seawater Pump DO NOT EXCEED	Backwashing through "A" Seawater Pump DO NOT EXCEED
CWS002	A Seawater Pp Inlet Temp***	Ambient +5°F or 74.1°F	N/A ****
CWS004	B Seawater Pp Inlet Temp***	N/A ****	Ambient +5°F or 74.1°F
CWS020	A Seawater Pp Disch Temp	Ambient +5°F or 74.1°F	118°F
CWS018	B Seawater Pp Disch Temp	118°F	Ambient +5°F or 74.1°F
RBC010	SSW to A Cooling Water Loops	74.1°F	74.1°F
RBC012	SSW to B Cooling Water Loops	74.1°F	74.1°F
CON024	E. Condenser Hotwell Outlet Temp	120°F	120°F
CON026	W. Condenser Hotwell Outlet Temp	120°F	120°F
TUR010	W. Condenser Press	4.0" Hg **	4.0" Hg**
TUR012	E. Condenser Press	4.0" Hg **	4.0" Hg**

1.0 INITIAL CONDITIONS (Continued)

Point*		Backwashing through "B" Seawater Pump DO NOT EXCEED	Backwashing through "A" Seawater Pump DO NOT EXCEED
GEN012	Stator Cooling Inlet to Cooler	80°C	80°C
C017M	Core Thermal Power	N/A	N/A
PES028	Generator Gross Power	N/A	N/A

* Add any other points for components in alarm.
** Alternatively use recorder on Panel C1 if these points are unreliable.
*** If the CW temperature indicators for some reason are not available, then utilize the other available temperature indications and/or computer points that are available in order to satisfy the NPDES permit requirements.
**** Instrument range 30°F to 110°F.

_____
Initials

NOTE

Prior to dispatching an Operator to the Screenhouse, ensure he/she has a copy of Attachment 9 (Condenser Backwash Data Sheet) to record data during the times the screens are operating in the reverse direction.

CAUTIONS

1. When reversing screens for backwashing the Condenser, the screens' two speed control switches should be placed to the "FAST" (20 FPM) position.
2. The Rear SSW Sluice Gate must be open prior to closing the East or West SSW Sluice Gate.

Initials

[6] **PRIOR** to reducing power for the Main Condenser thermal backwash, **ENSURE** sluice gate alignment by performing the following:

(a) **OPEN/VERIFY OPEN** the Rear SSW Sluice Gate (X-367C). _____

(b) **CLOSE** the East SSW Sluice Gate (X-367A). _____

1.0 INITIAL CONDITIONS (Continued)

Initials

[7] **PRIOR** to backwash, **ENSURE** Chemistry has performed an ambient pH analysis of the Seawater Intake for the NPDES permit. _____

[8] **SECURE/VERIFY SECURED** SSW and SW hypochlorite injection in accordance with PNPS 2.2.95, *"Chlorination System"*. _____

- **ENSURE** SSW Hypochlorination System status changes are logged in the CRS logbook. _____
- **ENSURE** Chemistry is notified of SSW Hypochlorination System status changes. _____

CAUTION

Single seawater pump operation at too high of a Reactor power level can cause Main Condenser differential temperatures to exceed the EPA limit of 32°F or Main Condenser vacuum to degrade.

[9] **REDUCE** Reactor power in accordance with PNPS 2.1.14 to a level acceptable for a backwash as determined by CRS/SM while constantly monitoring Main Condenser vacuum and differential temperatures. _____

[10] **PRIOR** to backwash, **LOWER** hydrogen flow to 5 SCFM in accordance with PNPS 10.2.4. **[CY.3-1]** _____

[11] **RECORD** initial data on Attachment 9 (Condenser Backwash Data Sheet). _____

CAUTION

Opening and/or closing of the Main Condenser Vapor Valves (AO-3703, AO-3704, AO-3710, and AO-3711) can affect dose rates and impact personnel exposure if work is taking place near any offgas process piping (Recombiner Room, Condenser Bay, and AOG 5' elevation).

[12] **PRIOR** to opening/closing any Main Condenser Vapor Valve (AO-3703, AO-3704, AO-3710, and/or AO-3711) in this Attachment, **NOTIFY** Radiation Protection. _____

2.0 BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP A

Initials

[1] **OPERATE** Screenwash System with all available screens running in the forward direction (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation). _____

[2] **PRIOR** to backwash, **RECORD** Circulating Water Pump amps. _____

P-105A amps _____ P-105B amps _____

[3] **OPEN/VERIFY OPEN** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

[4] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

2.0 BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP A (Continued)

NOTE

Steps [5] and [6] must be performed together.

CAUTION

During initial entry into a Main Condenser backwash alignment, Condensate Demineralizer Conductivity HI alarms at Panel C904R may be experienced due to time delays associated with instrument temperature compensation. If the observed conductivity rise persists for greater than 5 minutes, then enter PNPS 2.4.33.

Initials

[5] **CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[6] **WHEN** the first white light (12 to 18% OPEN position) comes on in Step [5], **THEN STOP** Seawater Pump A, P-105A. _____

[7] **IF** Seawater Pump A, P-105A, is required to be isolated, **THEN PERFORM** the following (**IF** not required, **ENTER** "N/P"): _____

(a) **CLOSE/VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703 _____
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711 _____

(c) **TAG OUT** Seawater Pump A, P-105A. _____

(d) **WHEN** maintenance is complete, **DE-TAG** Seawater Pump A, P-105A. _____

2.0 BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP A (Continued)

Initials

[8] **OPERATE** screens C and D on FAST speed in the reverse direction or as directed by the SM. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[9] **OPEN** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[10] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

[11] **OPEN/VERIFY OPEN** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703 _____
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711 _____

BACKWASH IS NOW ESTABLISHED.

[12] **RECORD** Circulating Water Pump amps at elapsed times of 15 and 30 minutes. _____

P-105B amps (15 min): _____ (30 min): _____

[13] **BACKWASH** until screens C and D are clean **OR** TI-38016 (A Loop SSW Inlet Temp to RBCCW Ht Ex) or TI-38017 (B Loop SSW Inlet Temp to RBCCW Ht Ex) indicates salt service loop temperatures of no greater than 74.1°F. _____

[14] **HAVE** the field Operator complete the second half of Attachment 9 (Condenser Backwash Data Sheet). _____

2.1 Returning from Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A)

Initials

[1] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

[2] **CLOSE** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[3] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

[4] **STOP** reverse rotation of screens C and D **AND OPERATE** screens C and D in forward direction. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[5] **OPEN** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[6] **WHEN** either Water Box Inlet Valve MO-3873 **OR** MO-3871 indicates 12 to 18% OPEN, **THEN START** Seawater Pump A, P-105A. _____

[7] **FULLY OPEN/VERIFY OPEN** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

2.1 Returning from Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A) (Continued)

Initials

[8] **ALLOW** all seawater and cooling water temperatures to stabilize before continuing. _____

CAUTION

Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

[9] **WHEN** notified by the Control Room, **OPEN** East SSW Sluice Gate (X-367A). _____

[10] **RECORD** Circulating Water Pump amps after backwash. _____

P-105A amps _____ P-105B amps _____

3.0 THERMAL BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B - HEAT TREATING

CAUTIONS

1. Failure to do the following step may lead to pump damage as well as loss of cooling water to the RBCCW and TBCCW heat exchangers. Always check from this point on that at least two sluice gates to the SSW Pumps are always open.
2. Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

Initials

[1] **VERIFY OPEN OR OPEN** the Rear SSW Sluice Gate (X-367C). _____

[2] **WHEN** notified by the Control Room, **CLOSE** the West SSW Sluice Gate (X-367B). _____

[3] **OPERATE** Screenwash System with all available screens running in the forward direction (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation). _____

[4] **PRIOR** to backwash, **RECORD** Circulating Water Pump amps. _____

P-105A amps _____ P-105B amps _____

[5] **OPEN/VERIFY OPEN** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

3.0 THERMAL BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B - HEAT TREATING (Continued)

Initials

[6] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

NOTE

Steps [7] and [8] must be performed together.

CAUTION

During initial entry into a Main Condenser backwash alignment, Condensate Demineralizer Conductivity HI alarms at Panel C904R may be experienced due to time delays associated with instrument temperature compensation. If the observed conductivity rise persists for greater than 5 minutes, then enter PNPS 2.4.33.

[7] **CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[8] **WHEN** the first white light (12 to 18% OPEN position) comes on in Step [7], **THEN STOP** Seawater Pump B, P-105B. _____

3.0 THERMAL BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B - HEAT TREATING (Continued)

Initials

[9] **IF** Seawater Pump B, P-105B, is required to be isolated, **THEN PERFORM** the following (**IF** not required, **ENTER** "N/P"):

(a) **CLOSE/VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710 _____
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704 _____

(c) **TAG OUT** Seawater Pump B, P-105B. _____

(d) **WHEN** maintenance is complete, **DE-TAG** Seawater Pump B, P-105B. _____

[10] **OPERATE** screens A and B on FAST speed in the reverse direction or as directed by the SM. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[11] **OPEN** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[12] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

3.0 THERMAL BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B - HEAT TREATING (Continued)

Initials

[13] **OPEN/VERIFY OPEN** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710 _____
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704 _____

BACKWASH IS NOW ESTABLISHED.

[14] **INFORM** Chemistry to perform a pH analysis of the seawater intake during a thermal backwash for the NPDES permit. _____

NOTES

1. EPA NPDES Permit limit for thermal backwash discharge at intake is 120°F for no more than 3 hours duration twice per week.
2. Points can also be checked on TSU-3400 on Panel C4.

CAUTIONS

1. While backwashing at this elevated temperature, check that the outlet temperature from Seawater Pump B (CWS018/CWS004) does not exceed 118°F or increase to a point where vacuum could deteriorate to below 26" Hg. Increase in the inlet temperature to the active SSW bay (TI-38016) and in-service Seawater Pump (CWS002/CWS020) should not exceed 5°F over prebackwash ambient or a maximum of 74.1°F.
2. Operating with Condenser vacuum ≤ 26" Hg for greater than 1 hour can cause water problems with the AOG System and the SJAE Radiation Monitors.

[15] **CAUTIOUSLY INCREASE** Reactor power to raise outlet temperature of "B" Pump (CWS018 and/or CWS004) to between 105°F and 118°F. _____

(a) **CLOSELY MONITOR** Condenser vacuum **AND TERMINATE** power increase when vacuum starts decreasing so as not to reduce vacuum below 26" Hg. _____

3.0 THERMAL BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B - HEAT TREATING (Continued)

Initials

[16] **RECORD** Circulating Water Pump amps at elapsed times of 15 and 30 minutes. _____

P-105B amps (15 min): _____ (30 min): _____

[17] **BACKWASH** until screens A and B are clean with no debris coming over the screens and point CWS018 or CWS004 indicates a temperature between 105°F and 118°F for at least 30 minutes. (**REFER TO** Attachment 12.) _____

[18] **HAVE** the field Operator complete the second half of Attachment 9 (Condenser Backwash Data Sheet). _____

[19] **WHEN** backwash is complete, **THEN REDUCE** Reactor power in accordance with PNPS 2.1.14 to a level acceptable for returning from backwash as determined by the CRS/SM while constantly monitoring Main Condenser vacuum. _____

3.1 Multiple Backwashes of the 1-1 and 1-3 Inlet Water Boxes

NOTE

If desired, placing the Condenser into and out of backwash may improve mussel removal from the tube sheet.

Initials

[1] **IF** desired to perform multiple backwash alignments, **THEN PERFORM** the following (**IF** not performed, **ENTER** "N/P"):

(a) **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

(b) **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

(c) **REPEAT** Steps 3.1[1](a) and (b), as necessary, to clean the 1-1 and 1-3 Inlet Water Boxes. _____

3.2 Returning from Thermal Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump B)

Initials

[1] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

[2] **CLOSE** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[3] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

[4] **STOP** reverse rotation of screens A and B **AND OPERATE** screens A and B in forward direction. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[5] **IF** Seawater Pump B, P-105B, is required to be isolated, **THEN PERFORM** the following (**IF** not required, **ENTER** "N/P"):

(a) **VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710 _____
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704 _____

(c) **TAG OUT** Seawater Pump B, P-105B. _____

3.2 Returning from Thermal Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump B) (Continued)

Initials

(d) **WHEN** maintenance is complete, **DE-TAG** Seawater Pump B, P-105B. _____

[6] **OPEN** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[7] **WHEN** either Water Box Inlet Valve MO-3872 **OR** MO-3870 indicates 12 to 18% OPEN, **THEN START** Seawater Pump B, P-105B. _____

[8] **FULLY OPEN/VERIFY OPEN** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[9] **OPEN/VERIFY OPEN** the following Condenser Offgas Vapor Valves:

(a) AO-3703, CNDSR A WEST SIDE OFFGAS VALVE (SV-3703, Water Box 1-2) _____

(b) AO-3710, CNDSR A WEST SIDE OFFGAS VALVE (SV-3710, Water Box 1-1) _____

(c) AO-3704, CNDSR B EAST SIDE OFFGAS VALVE (SV-3704, Water Box 1-3) _____

(d) AO-3711, CNDSR B EAST SIDE OFFGAS VALVE (SV-3711, Water Box 1-4) _____

[10] **ALLOW** all seawater and cooling water temperatures to stabilize before continuing. _____

4.0 THERMAL BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP "A" - HEAT TREATING

CAUTIONS

1. Failure to do the following step may lead to pump damage as well as loss of cooling water to the RBCCW and TBCCW heat exchangers. Always verify from this point on that at least two sluice gates to the SSW Pumps are always open.
2. Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

Initials

[1] **VERIFY OPEN OR OPEN** the Rear SSW Sluice Gate (X-367C). _____

[2] **WHEN** notified by the Control Room, **CLOSE** the East SSW Sluice Gate (X-367A). _____

[3] **OPERATE** Screenwash System with all available screens running in the forward direction (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation). _____

[4] **PRIOR** to backwash, **RECORD** Circulating Water Pump amps. _____

P-105A amps _____ P-105B amps _____

[5] **OPEN/VERIFY OPEN** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

3.2 Returning from Thermal Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump B) (Continued)

CAUTION

Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

Initials

[11] **WHEN** notified by the Control Room, **OPEN** the West SSW Sluice Gate (X-367B). _____

[12] **RECORD** Circulating Water Pump amps after backwash. _____

P-105A amps _____ P-105B amps _____

[13] **IF** not continuing with the thermal backwash of 1-2 and 1-4 Inlet Water Boxes (through Pump A), **THEN PERFORM** the following:

(a) **TERMINATE** the special log. _____

(b) **ATTACH** the special log to this Procedure. _____

(c) **CONTINUE** with Section 5.0 of this Attachment. _____

4.0 THERMAL BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP "A" - HEAT TREATING (Continued)

Initials

[6] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

NOTE

Steps [7] and [8] must be performed together.

CAUTION

During initial entry into a Main Condenser backwash alignment, Condensate Demineralizer Conductivity HI alarms at Panel C904R may be experienced due to time delays associated with instrument temperature compensation. If the observed conductivity rise persists for greater than 5 minutes, then enter PNPS 2.4.33.

[7] **CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[8] **WHEN** the first white light (12 to 18% OPEN position) comes on in Step [7], **THEN STOP** Seawater Pump A, P-105A. _____

4.0 THERMAL BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP "A" - HEAT TREATING (Continued)

Initials

[9] IF Seawater Pump A, P-105A, is required to be isolated, THEN PERFORM the following (IF not required, ENTER "N/P"):

(a) **CLOSE/VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703 _____
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711 _____

(c) **TAG OUT** Seawater Pump A, P-105A. _____

(d) WHEN maintenance is complete, **DE-TAG** Seawater Pump A, P-105A. _____

[10] **OPERATE** screens C and D on FAST speed in the reverse direction or as directed by the SM. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[11] **OPEN** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[12] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

[13] **OPEN/VERIFY OPEN** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703 _____
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711 _____

BACKWASH IS NOW ESTABLISHED.

4.0 THERMAL BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP "A" - HEAT TREATING (Continued)

Initials

[14] **NOTIFY** Chemistry to perform pH analysis of the seawater intake during a thermal backwash for the NPDES permit. _____

NOTES

1. EPA NPDES Permit limit for thermal backwash discharge at intake is 120°F for no more than 3 hours duration twice per week.
2. Points can also be checked on TSU-3400 on Panel C4.

CAUTIONS

1. While backwashing at this elevated temperature, check that the outlet temperature from Seawater Pump "A" (CWS002 and/or CWS020) does not exceed 118°F or increase to a point where vacuum could deteriorate to below 26" Hg. Increases in the inlet temperature to the active SSW bay (TI-38017) and in-service Seawater Pump (CWS018/CWS004) should not exceed 5°F over prebackwash ambient temperature or a maximum of 74.1°F.
2. Operating with Condenser vacuum ≤ 26" Hg for greater than 1 hour can cause water problems with the AOG System and the SJAE Radiation Monitors.

[15] **CAUTIOUSLY INCREASE** Reactor power to raise outlet temperature of "A" Pump (CWS002 and/or CWS020) to between 105°F and 118°F. _____

(a) **CLOSELY MONITOR** Condenser vacuum **AND TERMINATE** power increase when vacuum starts decreasing so as not to reduce vacuum below 26" Hg. _____

[16] **RECORD** Circulating Water Pump amps at elapsed times of 15 and 30 minutes. _____

P-105B amps (15 min): _____ (30 min): _____

[17] **BACKWASH** until screens C and D are clean with no debris coming over the screens and point CWS020 or CWS002 indicates a temperature of between 105°F and 118°F for at least 30 minutes. (**REFER TO** Attachment 12.) _____

4.0 THERMAL BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP "A" - HEAT TREATING (Continued)

Initials

[18] **HAVE** the field Operator complete the second half of Attachment 9 (Condenser Backwash Data Sheet). _____

[19] **WHEN** backwash is complete, **THEN REDUCE** Reactor power in accordance with PNPS 2.1.14 to a level acceptable for returning from backwash as determined by the CRS/SM while constantly monitoring Main Condenser vacuum. _____

4.1 Multiple Backwashes of the 1-2 and 1-4 Inlet Water Boxes

NOTE

If desired, placing the Condenser into and out of backwash may improve mussel removal from the tube sheet.

[1] **IF** desired to perform multiple backwash alignments, **THEN PERFORM** the following (**IF** not performed, **ENTER** "N/P"):

(a) **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

(b) **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

(c) **REPEAT** Steps 4.1[1](a) and (b), as necessary, to clean the 1-2 and 1-4 Inlet Water Boxes. _____

4.2 Returning Thermal Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A)

Initials

[1] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

[2] **CLOSE** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[3] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

[4] **STOP** reverse rotation of screens C and D **AND** **OPERATE** screens C and D in the forward direction. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[5] **IF** Seawater Pump A, P-105A, is required to be isolated, **THEN** **PERFORM** the following (**IF** not required, **ENTER** "N/P"):

(a) **VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A, West Side Off Gas Valve SV-3703 _____
- AO-3711, Cndsr B, East Side Off Gas Valve SV-3711 _____

4.2 Returning Thermal Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A) (Continued)

Initials

(c) **TAG OUT** Seawater Pump A, P-105A. _____

(d) **WHEN** maintenance is complete, **DE-TAG** Seawater Pump A, P-105A. _____

[6] **OPEN** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[7] **WHEN** either Water Box Inlet Valve MO-3873 **OR** MO-3871 indicates 12 to 18% OPEN, **THEN START** Seawater Pump A, P-105A. _____

[8] **FULLY OPEN/VERIFY OPEN** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[9] **OPEN/VERIFY OPEN** the following Condenser Offgas Vapor Valves:

(a) AO-3703, CNDSR A WEST SIDE OFFGAS VALVE (SV-3703, Water Box 1-2) _____

(b) AO-3710, CNDSR A WEST SIDE OFFGAS VALVE (SV-3710, Water Box 1-1) _____

(c) AO-3704, CNDSR B EAST SIDE OFFGAS VALVE (SV-3704, Water Box 1-3) _____

(d) AO-3711, CNDSR B EAST SIDE OFFGAS VALVE (SV-3711, Water Box 1-4) _____

[10] **ALLOW** all seawater and cooling water temperatures to stabilize before continuing. _____

4.2 Returning Thermal Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A) (Continued)

CAUTION

Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

Initials

[11] **WHEN** notified by the Control Room, **OPEN** the East SSW Sluice Gate (X-367A). _____

[12] **RECORD** Circulating Water Pump amps after backwash. _____

P-105A amps _____ P-105B amps _____

[13] **TERMINATE** special log **AND ATTACH** it to this Procedure. _____

[14] **CONTINUE** with Section 5.0 of this Attachment. _____

5.0 SEAWATER SYSTEM THERMAL BACKWASH RESTORATION

Initials

[1] **CLOSE** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

[2] **ALIGN/VERIFY ALIGNED** the SSW sluice gates as follows:

(a) East Sluice Gate (X-376A) OPEN _____

(b) West Sluice Gate (X-376B) OPEN _____

(c) Rear Sluice Gate (X-376C) CLOSED _____

[3] **OPEN/VERIFY OPEN** the following valves:

- 27-HO-3, Scavenger Line from Condenser 1-1 Outlet Water Box Block Valve _____
- 27-HO-4, Scavenger Line from Condenser 1-2 Outlet Water Box Block Valve _____
- 27-HO-7, Scavenger Line from Condenser 1-3 Outlet Water Box Block Valve _____
- 27-HO-8, Scavenger Line from Condenser 1-4 Outlet Water Box Block Valve _____
- 27-HO-9, Scavenger Line to Water Box Vacuum Control Tank Block Valve _____

[4] **PLACE** the SSW **AND** SW Hypochlorination System in service in accordance with PNPS 2.2.95. _____

- **ENSURE** SSW Hypochlorination System status changes are logged in the CRS logbook. _____
- **ENSURE** Chemistry is notified of SSW Hypochlorination System status changes. _____

[5] **CLEAR** the Caution Tag on the hydrogen controller in service **AND RESTORE** hydrogen injection flow to normal in accordance with PNPS 10.2.4. _____

5.0 SEAWATER SYSTEM THERMAL BACKWASH RESTORATION (Continued)

Initials

[6] **PERFORM** Attachment 13 (Seawater System Backwash Restoration Verification) **AND ATTACH** to this Procedure. _____

[7] **VERIFY** the following:

(a) Backwash complete. _____

(b) Screenwash System returned to Normal/Standby lineup. _____

(c) Hypochlorination System in service in accordance with PNPS 2.2.95. _____

(d) Attachment 8/Special Log reviewed and attached. _____

(e) All required data has been recorded on the appropriate copies of Attachment 9 and attached. _____

(f) Hydrogen injection restored to normal flow rate. _____

(g) Attachment 13 (Seawater System Backwash Restoration Verification) complete. _____

(h) Attachment 5 (Thermal Backwash of the Main Condenser complete. _____

[8] Backwash completed and all Attachments/Special Log reviewed.

_____ _____
On-Shift SRO Date

[9] **FORWARD** a copy of this Attachment and all Attachment 9 forms to the Mechanical/Civil/Structural Engineering System Engineer. _____
OA

THERMAL BACKWASH OF THE MAIN CONDENSER (THERMAL 'B', THERMAL 'A')

1.0 INITIAL CONDITIONS

[1] **PERFORM** a Pre-Evolution Brief Checklist in accordance with Section 6.10 of PNPS 1.3.34. Below is a list of items that should be covered during the Pre-Evolution Brief.

(a) Appropriate groups notified - Radiation Protection/Chemistry/ISO New England.

(b) Review all Precautions and Limitations in base document Section 5.0 of this Procedure.

(c) Human performance tools including robust barriers are utilized throughout the evolution.

(d) Reactor water level responsibility assigned.

(e) The proper Attachment of this Procedure for the planned evolution has been identified and personnel in the field have a copy.

(f) Communications between the Control Room and field Operators can be established - field Operators have headsets, if required.

(g) Sluice gates are properly aligned and previously exercised.

(h) Condenser vacuum is monitored throughout backwash.

(i) Speed Load Changer is adjusted as necessary in accordance with PNPS 2.1.14.

(j) Feedwater heater levels are monitored.

(k) Line of communication with divers, if applicable.

(l) Sluiceway aligned to discharge canal.

(m) Maintain Main Condenser ΔT's within limits (refer to base document Section 5.2 of this Procedure).

(n) Maximum discharge temp of 118°F (120°F EPA limit).

(o) Maximum hotwell temp of 120°F.

1.0 INITIAL CONDITIONS (Continued)

[2] Proper notifications made in accordance with PNPS 1.3.12 and permission to begin backwash granted.

_____
Shift Manager Date

[3] Attachment 1 (Condenser Backwash Alignments and Prerequisites) has been completed.

_____
Shift Manager Date

[4] Personnel assigned to perform steps within this Attachment have read the applicable sections/steps and understand their required involvement. All personnel (i.e., Operations, Maintenance) who will complete procedural steps must print their name and sign their initials below.

Name (print)	Initials	Name (print)	Initials
Name (print)	Initials	Name (print)	Initials
Name (print)	Initials	Name (print)	Initials
Name (print)	Initials	Name (print)	Initials

1.0 INITIAL CONDITIONS (Continued)

NOTES

1. Every attempt should be made to perform thermal backwashing during higher tide levels. If not performed at higher tide levels, elevated SSW temperatures may occur.
2. When a decision has been made to backwash the Main Condenser using the heat treating process, notify the PNPS Environmental Department when REMVEC is notified so that the appropriate biologist divers can be alerted to be on-site when needed for postbackwash inspection.
3. Perform only those sections necessary for the backwash evolution planned. Steps in sections not performed may be omitted by placing "N/P" and CRS initialing in the initial block. (Refer to PNPS 1.3.34.)
4. Attachment 1 (Condenser Backwash Alignments and Prerequisites) has been completed.
5. When complete, Attachment 6 shall be filed in the Control Room Annex files.
6. Special Log will be attached to this Procedure upon completion.
7. For Condenser backwashing, sluiceway baffle plates should be positioned to divert screenwash flow and debris to west side (discharge canal).
8. All water box outlet valves are jog valves in the closed direction only.
9. This Attachment has been written to stand on its own for a Main Condenser thermal backwash. If another sequence is planned, perform the appropriate Attachment.
10. Conductivity monitoring requires temperature compensation to accurately indicate the process conductivity. This temperature compensation results in a delay in the detection instrumentation circuitry. Therefore, when the process temperature rises (i.e., during a Condenser backwash), conductivity indication will also rise until the temperature compensation circuitry has had sufficient time to correct for the rise in temperature. This response time should be less than 5 minutes. If the rise in conductivity persists or continues to increase, then enter PNPS 2.4.33. Ensure Chemistry is also monitoring similar point(s) on the Chemistry Lab computer. Validate Control Room indications with Chemistry if a chloride intrusion is suspected.

1.0 INITIAL CONDITIONS (Continued)

CAUTIONS

1. When a Condenser quadrant does not have cooling flow, the associated vapor valve to the SJAE must be closed to prevent choking of the SJAE. After cooling flow is restored, the vapor valves may be reopened once sufficient cooling has been established, as evidenced by the outlet temperature of the circulating water being at or near the outlet temperatures of the other in-service quadrants and stable.
2. Large quantities of mussels greater than 10 mm in length on intake surface should be mechanically removed prior to any backwash with temperature exceeding 75°F. Higher temperatures may kill attached mussels causing them to become detached and resulting in significant Condenser plugging.
3. Operating with Condenser vacuum ≤ 26" Hg for greater than 1 hour can cause water problems with the AOG System and the SJAE Radiation Monitors.

[5] **ACTIVATE** the special log on EPIC to run every 5 minutes during the performance of this Attachment and to include the following:

Point*		Backwashing through "B" Seawater Pump DO NOT EXCEED	Backwashing through "A" Seawater Pump DO NOT EXCEED
CWS002	A Seawater Pp Inlet Temp***	Ambient +5°F or 74.1°F	N/A ****
CWS004	B Seawater Pp Inlet Temp***	N/A ****	Ambient +5°F or 74.1°F
CWS020	A Seawater Pp Disch Temp	Ambient +5°F or 74.1°F	118°F
CWS018	B Seawater Pp Disch Temp	118°F	Ambient +5°F or 74.1°F
RBC010	SSW to A Cooling Water Loops	74.1°F	74.1°F
RBC012	SSW to B Cooling Water Loops	74.1°F	74.1°F
CON024	E. Condenser Hotwell Outlet Temp	120°F	120°F
CON026	W. Condenser Hotwell Outlet Temp	120°F	120°F
TUR010	W. Condenser Press	4.0" Hg **	4.0" Hg**

1.0 INITIAL CONDITIONS (Continued)

Point*		Backwashing through "B" Seawater Pump DO NOT EXCEED	Backwashing through "A" Seawater Pump DO NOT EXCEED
TUR012	E. Condenser Press	4.0" Hg **	4.0" Hg**
GEN012	Stator Cooling Inlet to Cooler	80°C	80°C
C017M	Core Thermal Power	N/A	N/A
PES028	Generator Gross Power	N/A	N/A

* Add any other points for components in alarm.
** Alternatively use recorder on Panel C1 if these points are unreliable.
*** If the CW temperature indicators for some reason are not available, then utilize the other available temperature indications and/or computer points that are available in order to satisfy the NPDES permit requirements.
**** Instrument range 30°F to 110°F.

_____
Initials

NOTE

Prior to dispatching an Operator to the Screenhouse, ensure he/she has a copy of Attachment 9 (Condenser Backwash Data Sheet) to record data during the times the screens are operating in the reverse direction.

CAUTIONS

1. When reversing screens for backwashing the Condenser, the screens' two speed control switches should be placed to the "FAST" (20 FPM) position.
2. The Rear SSW Sluice Gate must be open prior to closing the East or West SSW Sluice Gate.

Initials

[6] **PRIOR** to reducing power for the Main Condenser thermal backwash, **ENSURE** sluice gate alignment by performing the following:

(a) **OPEN/VERIFY OPEN** the Rear SSW Sluice Gate (X-367C). _____

(b) **CLOSE** the West SSW Sluice Gate (X-367B). _____

1.0 INITIAL CONDITIONS (Continued)

Initials

[7] **PRIOR** to backwash, **ENSURE** Chemistry has performed an ambient pH analysis of the Seawater Intake for the NPDES permit. _____

[8] **SECURE/VERIFY SECURED** SSW and SW hypochlorite injection in accordance with PNPS 2.2.95, *"Chlorination System"*. _____

- **ENSURE** SSW Hypochlorination System status changes are logged in the CRS logbook. _____
- **ENSURE** Chemistry is notified of SSW Hypochlorination System status changes. _____

CAUTION

Single seawater pump operation at too high of a Reactor power level can cause Main Condenser differential temperatures to exceed the EPA limit of 32°F or Main Condenser vacuum to degrade.

[9] **REDUCE** Reactor power in accordance with PNPS 2.1.14 to a level acceptable for a backwash as determined by CRS/SM while constantly monitoring Main Condenser vacuum and differential temperatures. _____

[10] **PRIOR** to backwash, **ADJUST** hydrogen flow to 15 SCFM in accordance with PNPS 10.2.4. **[CY.3-1]** _____

(a) **NOTIFY** Radiation Protection of the change in hydrogen flow to 15 SCFM. _____

(b) **NOTIFY** Chemistry of the change in hydrogen flow to 15 SCFM. _____

[11] **RECORD** initial data on Attachment 9 (Condenser Backwash Data Sheet). _____

1.0 INITIAL CONDITIONS (Continued)

CAUTION

Opening and/or closing of the Main Condenser Vapor Valves (AO-3703, AO-3704, AO-3710, and AO-3711) can affect dose rates and impact personnel exposure if work is taking place near any offgas process piping (Recombiner Room, Condenser Bay, and AOG 5' elevation).

Initials

[12] **PRIOR** to opening/closing any Main Condenser Vapor Valve (AO-3703, AO-3704, AO-3710, and/or AO-3711) in this Attachment, **NOTIFY** Radiation Protection. _____

2.0 THERMAL BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B - HEAT TREATING

Initials

[1] **OPERATE** Screenwash System with all available screens running in the forward direction (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation). _____

[2] **PRIOR** to backwash, **RECORD** Circulating Water Pump amps. _____

P-105A amps _____ P-105B amps _____

[3] **OPEN/VERIFY OPEN** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

[4] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

2.0 THERMAL BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B - HEAT TREATING (Continued)

NOTE

Steps [5] and [6] must be performed together.

CAUTION

During initial entry into a Main Condenser backwash alignment, Condensate Demineralizer Conductivity HI alarms at Panel C904R may be experienced due to time delays associated with instrument temperature compensation. If the observed conductivity rise persists for greater than 5 minutes, then enter PNPS 2.4.33.

Initials

[5] **CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[6] **WHEN** the first white light (12 to 18% OPEN position) comes on in Step [5], **THEN STOP** Seawater Pump B, P-105B. _____

[7] **IF** Seawater Pump B, P-105B, is required to be isolated, **THEN PERFORM** the following (**IF** not required, **ENTER** "N/P"):

(a) **CLOSE/VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710 _____
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704 _____

(c) **TAG OUT** Seawater Pump B, P-105B. _____

(d) **WHEN** maintenance is complete, **DE-TAG** Seawater Pump B, P-105B. _____

2.0 THERMAL BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B - HEAT TREATING (Continued)

Initials

[8] **OPERATE** screens A and B on FAST speed in the reverse direction or as directed by the SM. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[9] **OPEN** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[10] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

[11] **OPEN/VERIFY OPEN** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710 _____
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704 _____

BACKWASH IS NOW ESTABLISHED

[12] **NOTIFY** Chemistry to perform a pH analysis of the Seawater Intake during a thermal backwash for the NPDES permit. _____

NOTES

1. EPA NPDES Permit limit for thermal backwash discharge at intake is 120°F for no more than 3 hours duration twice per week.
2. Points can also be checked on TSU-3400 on Panel C4.

2.0 THERMAL BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B - HEAT TREATING (Continued)

CAUTIONS

1. While backwashing at this elevated temperature, check that the outlet temperature from Seawater Pump B (CWS018/CWS004) does not exceed 118°F or increase to a point where vacuum could deteriorate to below 26" Hg. Increase in the inlet temperature to the active SSW bay (TI-38016) and in-service Seawater Pump (CWS002/CWS020) should not exceed 5°F over prebackwash ambient or a maximum of 74.1°F.
2. Operating with Condenser vacuum ≤ 26" Hg for greater than 1 hour can cause water problems with the AOG System and the SJAE Radiation Monitors.

Initials

[13] **CAUTIOUSLY INCREASE** Reactor power to raise outlet temperature of "B" Pump (CWS018 and/or CWS004) to between 105°F and 118°F. _____

(a) **CLOSELY MONITOR** Condenser vacuum **AND TERMINATE** power increase when vacuum starts decreasing so as not to reduce vacuum below 26" Hg. _____

[14] **RECORD** Circulating Water Pump amps at elapsed times of 15 and 30 minutes. _____

P-105A amps (15 min): _____ (30 min): _____

[15] **BACKWASH** until screens A and B are clean with no debris coming over the screens and point CWS018 or CWS004 indicates a temperature between 105°F and 118°F for at least 30 minutes. (**REFER TO** Attachment 12.) _____

[16] **HAVE** the field Operator complete the second half of Attachment 9 (Condenser Backwash Data Sheet). _____

[17] **WHEN** backwash is complete, **THEN REDUCE** Reactor power in accordance with PNPS 2.1.14 to a level acceptable for returning from backwash as determined by the CRS/SM while constantly monitoring Main Condenser vacuum. _____

2.1 Multiple Backwashes of the 1-1 and 1-3 Inlet Water Boxes

NOTE

If desired, placing the Condenser into and out of backwash may improve mussel removal from the tube sheet.

Initials

[1] **IF** desired to perform multiple backwash alignments, **THEN PERFORM** the following (**IF** not performed, **ENTER** "N/P"):

(a) **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

(b) **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

(c) **REPEAT** Steps 2.1[1](a) and (b), as necessary, to clean the 1-1 and 1-3 Inlet Water Boxes. _____

2.2 Returning from Thermal Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump B)

Initials

[1] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

[2] **CLOSE** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[3] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

[4] **STOP** reverse rotation of screens A and B **AND** **OPERATE** screens A and B in forward direction. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[5] **IF** Seawater Pump B, P-105B, is required to be isolated, **THEN** **PERFORM** the following (**IF** not required, **ENTER** "N/P"):

(a) **VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A, West Side Off Gas Valve SV-3710 _____
- AO-3704, Cndsr B, East Side Off Gas Valve SV-3704 _____

(c) **TAG OUT** Seawater Pump B, P-105B. _____

2.2 Returning from Thermal Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump B) (Continued)

Initials

(d) **WHEN** maintenance is complete, **DE-TAG** Seawater Pump B, P-105B. _____

[6] **OPEN** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[7] **WHEN** either Water Box Inlet Valve MO-3872 **OR** MO-3870 indicates 12 to 18% OPEN, **THEN START** Seawater Pump B, P-105B. _____

[8] **FULLY OPEN/VERIFY OPEN** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[9] **OPEN/VERIFY OPEN** the following Condenser Offgas Vapor Valves:

(a) AO-3703, CNDSR A WEST SIDE OFFGAS VALVE (SV-3703, Water Box 1-2) _____

(b) AO-3710, CNDSR A WEST SIDE OFFGAS VALVE (SV-3710, Water Box 1-1) _____

(c) AO-3704, CNDSR B EAST SIDE OFFGAS VALVE (SV-3704, Water Box 1-3) _____

(d) AO-3711, CNDSR B EAST SIDE OFFGAS VALVE (SV-3711, Water Box 1-4) _____

[10] **ALLOW** all seawater and cooling water temperatures to stabilize before continuing. _____

2.2 Returning from Thermal Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump B) (Continued)

CAUTION

Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

Initials

[11] **WHEN** notified by the Control Room, **OPEN** the West SSW Sluice Gate (X-367B). _____

[12] **RECORD** Circulating Water Pump amps after backwash. _____

P-105A amps _____ P-105B amps _____

[13] **IF** not continuing with the thermal backwash of 1-2 and 1-4 Inlet Water Boxes (through Pump A), **THEN PERFORM** the following:

(a) **TERMINATE** the special log. _____

(b) **ATTACH** the special log to this Procedure. _____

(c) **CONTINUE** with Section 4.0 of this Attachment. _____

3.0 THERMAL BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP "A" - HEAT TREATING

CAUTIONS

1. Failure to do the following step may lead to pump damage as well as loss of cooling water to the RBCCW and TBCCW heat exchangers. Always verify from this point on that at least two sluice gates to the SSW Pumps are always open.
2. Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

Initials

[1] **PRIOR** to backwashing the 1-2 and 1-4 Water Boxes, **PERFORM** following:

(a) **NOTIFY** Radiation Protection of the change in hydrogen flow to 20 SCFM. _____

(b) **NOTIFY** Chemistry of the change in hydrogen flow to 20 SCFM. _____

(c) **RAISE** hydrogen flow to 20 SCFM in accordance with PNPS 10.2.4. _____

[2] **VERIFY OPEN OR OPEN** the Rear SSW Sluice Gate (X-367C). _____

[3] **WHEN** notified by the Control Room, **CLOSE** the East SSW Sluice Gate (X-367A). _____

[4] **OPERATE** Screenwash System with all available screens running in the forward direction (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation). _____

[5] **PRIOR** to backwash, **RECORD** Circulating Water Pump amps. _____

P-105A amps _____ P-105B amps _____

3.0 THERMAL BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP "A" - HEAT TREATING (Continued)

Initials

[6] **OPEN/VERIFY OPEN** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

[7] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

NOTE

Steps [8] and [9] must be performed together.

CAUTION

During initial entry into a Main Condenser backwash alignment, Condensate Demineralizer Conductivity HI alarms at Panel C904R may be experienced due to time delays associated with instrument temperature compensation. If the observed conductivity rise persists for greater than 5 minutes, then enter PNPS 2.4.33.

[8] **CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[9] **WHEN** the first white light (12 to 18% OPEN position) comes on in Step [8], **THEN STOP** Seawater Pump A, P-105A. _____

3.0 THERMAL BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP "A" - HEAT TREATING (Continued)

Initials

[10] IF Seawater Pump A, P-105A, is required to be isolated, THEN PERFORM the following (IF not required, ENTER "N/P"):

(a) **CLOSE/VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703 _____
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711 _____

(c) **TAG OUT** Seawater Pump A, P-105A. _____

(d) WHEN maintenance is complete, **DE-TAG** Seawater Pump A, P-105A. _____

[11] **OPERATE** screens C and D on FAST speed in the reverse direction or as directed by the SM. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[12] **OPEN** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[13] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

3.0 THERMAL BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP "A" - HEAT TREATING (Continued)

Initials

[14] **OPEN/VERIFY OPEN** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703 _____
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711 _____

BACKWASH IS NOW ESTABLISHED.

[15] **NOTIFY** Chemistry to perform pH analysis of the Seawater Intake during a thermal backwash for the NPDES permit. _____

NOTES

1. EPA NPDES Permit limit for thermal backwash discharge at intake is 120°F for no more than 3 hours duration twice per week.
2. Points can also be checked on TSU-3400 on Panel C4.

CAUTIONS

1. While backwashing at this elevated temperature, check that the outlet temperature from Seawater Pump "A" (CWS002 and/or CWS020) does not exceed 118°F or increase to a point where vacuum could deteriorate to below 26" Hg. Increases in the inlet temperature to the active SSW bay (TI-38017) and in-service Seawater Pump (CWS018/CWS004) should not exceed 5°F over prebackwash ambient temperature or a maximum of 74.1°F.
2. Operating with Condenser vacuum ≤ 26" Hg for greater than 1 hour can cause water problems with the AOG System and the SJAE Radiation Monitors.

[16] **CAUTIOUSLY INCREASE** Reactor power to raise outlet temperature of "A" Pump (CWS002 and/or CWS020) to between 105°F and 118°F. _____

(a) **CLOSELY MONITOR** Condenser vacuum **AND TERMINATE** power increase when vacuum starts decreasing so as not to reduce vacuum below 26" Hg. _____

3.0 THERMAL BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP "A" - HEAT TREATING (Continued)

Initials

[17] **RECORD** Circulating Water Pump amps at elapsed times of 15 and 30 minutes. _____

P-105B amps (15 min): _____ (30 min): _____

[18] **BACKWASH** until screens C and D are clean with no debris coming over the screens and point CWS020 or CWS002 indicates a temperature of between 105°F and 118°F for at least 30 minutes. (**REFER TO** Attachment 12.) _____

[19] **HAVE** the field Operator complete the second half of Attachment 9 (Condenser Backwash Data Sheet). _____

[20] **WHEN** backwash is complete, **THEN REDUCE** Reactor power in accordance with PNPS 2.1.14 to a level acceptable for returning from backwash as determined by the CRS/SM while constantly monitoring Main Condenser vacuum. _____

3.1 Multiple Backwashes of the 1-2 and 1-4 Inlet Water Boxes

NOTE

If desired, placing the Condenser into and out of backwash may improve mussel removal from the tube sheet.

Initials

[1] **IF** desired to perform multiple backwash alignments, **THEN PERFORM** the following (**IF** not performed, **ENTER** "N/P"):

(a) **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

(b) **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

(c) **REPEAT** Steps 3.1[1](a) and (b), as necessary, to clean the 1-2 and 1-4 Inlet Water Boxes. _____

3.2 Returning Thermal Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A)

Initials

[1] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

[2] **CLOSE** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[3] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

[4] **STOP** reverse rotation of screens C and D **AND** **OPERATE** screens C and D in the forward direction. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[5] **IF** Seawater Pump A, P-105A, is required to be isolated, **THEN** **PERFORM** the following (**IF** not required, **ENTER** "N/P"):

(a) **VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A, West Side Off Gas Valve SV-3703 _____
- AO-3711, Cndsr B, East Side Off Gas Valve SV-3711 _____

(c) **TAG OUT** Seawater Pump A, P-105A. _____

3.2 Returning Thermal Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A) (Continued)

Initials

(d) **WHEN** maintenance is complete, **DE-TAG** Seawater Pump B, P-105B. _____

[6] **OPEN** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[7] **WHEN** either Water Box Inlet Valve MO-3873 **OR** MO-3871 indicates 12 to 18% OPEN, **THEN START** Seawater Pump A, P-105A. _____

[8] **FULLY OPEN/VERIFY OPEN** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[9] **OPEN/VERIFY OPEN** the following Condenser Offgas Vapor Valves:

(a) AO-3703, CNDSR A WEST SIDE OFFGAS VALVE (SV-3703, Water Box 1-2) _____

(b) AO-3710, CNDSR A WEST SIDE OFFGAS VALVE (SV-3710, Water Box 1-1) _____

(c) AO-3704, CNDSR B EAST SIDE OFFGAS VALVE (SV-3704, Water Box 1-3) _____

(d) AO-3711, CNDSR B EAST SIDE OFFGAS VALVE (SV-3711, Water Box 1-4) _____

[10] **ALLOW** all seawater and cooling water temperatures to stabilize before continuing. _____

3.2 Returning Thermal Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A) (Continued)

CAUTION

Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

Initials

[11] **WHEN** notified by the Control Room, **OPEN** the East SSW Sluice Gate (X-367A). _____

[12] **RECORD** Circulating Water Pump amps after backwash. _____

P-105A amps _____ P-105B amps _____

[13] **TERMINATE** special log **AND ATTACH** it to this Procedure. _____

[14] **CONTINUE** with Section 4.0 of this Attachment. _____

4.0 SEAWATER SYSTEM THERMAL BACKWASH RESTORATION

Initials

[1] **CLOSE** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

[2] **ALIGN/VERIFY ALIGNED** the SSW sluice gates as follows:

(a) East Sluice Gate (X-376A) OPEN _____

(b) West Sluice Gate (X-376B) OPEN _____

(c) Rear Sluice Gate (X-376C) CLOSED _____

[3] **OPEN/VERIFY OPEN** the following valves:

- 27-HO-3, Scavenger Line from Condenser 1-1 Outlet Water Box Block Valve _____
- 27-HO-4, Scavenger Line from Condenser 1-2 Outlet Water Box Block Valve _____
- 27-HO-7, Scavenger Line from Condenser 1-3 Outlet Water Box Block Valve _____
- 27-HO-8, Scavenger Line from Condenser 1-4 Outlet Water Box Block Valve _____
- 27-HO-9, Scavenger Line to Water Box Vacuum Control Tank Block Valve _____

[4] **PLACE** the SSW **AND** SW Hypochlorination System in service in accordance with PNPS 2.2.95. _____

- **ENSURE** SSW Hypochlorination System status changes are logged in the CRS logbook. _____
- **ENSURE** Chemistry is notified of SSW Hypochlorination System status changes. _____

[5] **CLEAR** the Caution Tag on the hydrogen controller in service **AND RESTORE** hydrogen injection flow to normal in accordance with PNPS 10.2.4. _____

4.0 SEAWATER SYSTEM THERMAL BACKWASH RESTORATION (Continued)

Initials

[6] **PERFORM** Attachment 13 (Seawater System Backwash Restoration Verification) **AND ATTACH** to this Procedure. _____

[7] **VERIFY** the following:

(a) Backwash complete. _____

(b) Screenwash System returned to Normal/Standby lineup. _____

(c) Hypochlorination System in service in accordance with PNPS 2.2.95. _____

(d) Attachment 8/Special Log reviewed and attached. _____

(e) All required data has been recorded on the appropriate copies of Attachment 9 and attached. _____

(f) Hydrogen injection restored to normal flow rate. _____

(g) Attachment 13 (Seawater System Backwash Restoration Verification) complete. _____

(h) Attachment 6 (Thermal Backwash of the Main Condenser) complete. _____

[8] Backwash completed and all Attachments/Special Log reviewed.

_____ _____
On-Shift SRO Date

[9] **FORWARD** a copy of this Attachment and all Attachment 9 forms to the Mechanical/Civil/Structural Engineering System Engineer.

_____
OA Init.

THERMAL BACKWASH OF THE MAIN CONDENSER (THERMAL 'A', THERMAL 'B')

1.0 INITIAL CONDITIONS

[1] **PERFORM** a Pre-Evolution Brief Checklist in accordance with Section 6.10 of PNPS 1.3.34. Below is a list of items that should be covered during the Pre-Evolution Brief.

(a) Appropriate groups notified - Radiation Protection/Chemistry/ISO New England.

(b) Review all Precautions and Limitations in base document Section 5.0 of this Procedure.

(c) Human performance tools including robust barriers utilized throughout the evolution.

(d) Reactor water level responsibility assigned.

(e) The proper Attachment of this Procedure for the planned evolution has been identified and personnel in the field have a copy.

(f) Communications between the Control Room and field Operators can be established - field Operators have headsets, if required.

(g) Sluice gates are properly aligned and previously exercised.

(h) Condenser vacuum is monitored throughout backwash.

(i) Speed Load Changer is adjusted as necessary in accordance with PNPS 2.1.14.

(j) Feedwater heater levels are monitored.

(k) Line of communication with divers, if applicable.

(l) Sluiceway aligned to discharge canal.

(m) Maintain Main Condenser ΔT's within limits. (Refer to base document Section 5.2 of this Procedure.)

(n) Maximum discharge temp of 118°F (120°F EPA limit).

(o) Maximum hotwell temp of 120°F.

1.0 INITIAL CONDITIONS (Continued)

[2] Proper notifications made in accordance with PNPS 1.3.12 and permission to begin backwash granted.

_____
Shift Manager Date

[3] Attachment 1 (Condenser Backwash Alignments and Prerequisites) has been completed.

_____
Shift Manager Date

[4] Personnel assigned to perform steps within this Attachment have read the applicable sections/steps and understand their required involvement. All personnel (i.e., Operations, Maintenance) who will complete procedural steps must print their name and sign their initials below.

Name (print)	Initials	Name (print)	Initials
Name (print)	Initials	Name (print)	Initials
Name (print)	Initials	Name (print)	Initials
Name (print)	Initials	Name (print)	Initials

1.0 INITIAL CONDITIONS (Continued)

NOTES

1. Every attempt should be made to perform thermal backwashing during higher tide levels. If not performed at higher tide levels, elevated SSW temperatures may occur.
2. When a decision has been made to backwash the Main Condenser using the heat treating process, notify the PNPS Environmental Department when REMVEC is notified so that the appropriate biologist divers can be alerted to be on-site when needed for postbackwash inspection.
3. Perform only those sections necessary for the backwash evolution planned. Steps in sections not performed may be omitted by placing "N/P" and CRS initialing in the initial block. (Refer to PNPS 1.3.34.)
4. Attachment 1 (Condenser Backwash Alignments and Prerequisites) has been completed.
5. When complete, Attachment 7 shall be filed in the Control Room Annex files.
6. Special Log will be attached to this Procedure upon completion.
7. For Condenser backwashing, sluiceway baffle plates should be positioned to divert screenwash flow and debris to west side (discharge canal).
8. All water box outlet valves are jog valves in the closed direction only.
9. This Attachment has been written to stand on its own for a Main Condenser thermal backwash. If another sequence is planned, perform the appropriate Attachment.
10. Conductivity monitoring requires temperature compensation to accurately indicate the process conductivity. This temperature compensation results in a delay in the detection instrumentation circuitry. Therefore, when the process temperature rises (i.e., during a Condenser backwash), conductivity indication will also rise until the temperature compensation circuitry has had sufficient time to correct for the rise in temperature. This response time should be less than 5 minutes. If the rise in conductivity persists or continues to increase, then enter PNPS 2.4.33. Ensure Chemistry is also monitoring similar point(s) on the Chemistry Lab computer. Validate Control Room indications with Chemistry if a chloride intrusion is suspected.

1.0 INITIAL CONDITIONS (Continued)

CAUTIONS

1. When a Condenser quadrant does not have cooling flow, the associated vapor valve to the SJAE must be closed to prevent choking of the SJAE. After cooling flow is restored, the vapor valves may be reopened once sufficient cooling has been established, as evidenced by the outlet temperature of the circulating water being at or near the outlet temperatures of the other in-service quadrants and stable.
2. Large quantities of mussels greater than 10 mm in length on intake surface should be mechanically removed prior to any backwash with temperature exceeding 75°F. Higher temperatures may kill attached mussels causing them to become detached and resulting in significant Condenser plugging.
3. Operating with Condenser vacuum ≤ 26" Hg for greater than 1 hour can cause water problems with the AOG System and the SJAE Radiation Monitors.

[5] **ACTIVATE** the special log on EPIC to run every 5 minutes during the performance of this Attachment and to include the following:

Point*		Backwashing through "B" Seawater Pump DO NOT EXCEED	Backwashing through "A" Seawater Pump DO NOT EXCEED
CWS002	A Seawater Pp Inlet Temp***	Ambient +5°F or 74.1°F	N/A ****
CWS004	B Seawater Pp Inlet Temp***	N/A ****	Ambient +5°F or 74.1°F
CWS020	A Seawater Pp Disch Temp	Ambient +5°F or 74.1°F	118°F
CWS018	B Seawater Pp Disch Temp	118°F	Ambient +5°F or 74.1°F
RBC010	SSW to A Cooling Water Loops	74.1°F	74.1°F
RBC012	SSW to B Cooling Water Loops	74.1°F	74.1°F
CON024	E. Condenser Hotwell Outlet Temp	120°F	120°F
CON026	W. Condenser Hotwell Outlet Temp	120°F	120°F
TUR010	W. Condenser Press	4.0" Hg **	4.0" Hg**
TUR012	E. Condenser Press	4.0" Hg **	4.0" Hg**

1.0 INITIAL CONDITIONS (Continued)

Point*		Backwashing through "B" Seawater Pump DO NOT EXCEED	Backwashing through "A" Seawater Pump DO NOT EXCEED
GEN012	Stator Cooling Inlet to Cooler	80°C	80°C
C017M	Core Thermal Power	N/A	N/A
PES028	Generator Gross Power	N/A	N/A

* Add any other points for components in alarm.
** Alternatively use recorder on Panel C1 if these points are unreliable.
*** If the CW temperature indicators for some reason are not available, then utilize the other available temperature indications and/or computer points that are available in order to satisfy the NPDES permit requirements.
****Instrument range 30°F to 110°F.

Initials

NOTE

Prior to dispatching an Operator to the Screenhouse, ensure he has a copy of Attachment 8 (Condenser Backwash Data Sheet) to record data during the times the screens are operating in the reverse direction.

CAUTIONS

1. When reversing screens for backwashing the Condenser, the screens' two-speed control switches should be placed to the "FAST" (20 FPM) position.
2. The Rear SSW Sluice Gate must be open prior to closing the East or West SSW Sluice Gate.

Initials

[6] **PRIOR** to reducing power for the Main Condenser thermal backwash, **ENSURE** sluice gate alignment by performing the following:

(a) **OPEN/VERIFY OPEN** the Rear SSW Sluice Gate (X-367C). _____

(b) **CLOSE** the East SSW Sluice Gate (X-367A). _____

1.0 INITIAL CONDITIONS (Continued)

Initials

[7] **PRIOR** to backwash, **ENSURE** Chemistry has performed an ambient pH analysis of Seawater Intake for the NPDES permit. _____

[8] **SECURE/VERIFY SECURED** SSW and SW hypochlorite injection in accordance with PNPS 2.2.95, *"Chlorination System"*. _____

- **ENSURE** SSW Hypochlorination System status changes are logged in the CRS logbook. _____
- **ENSURE** Chemistry is notified of SSW Hypochlorination System status changes. _____

CAUTION

Single seawater pump operation at too high of a Reactor power level can cause Main Condenser differential temperatures to exceed the EPA limit of 32°F or Main Condenser vacuum to degrade.

[9] **REDUCE** Reactor power in accordance with PNPS 2.1.14 to a level acceptable for a backwash as determined by CRS/SM while constantly monitoring Main Condenser vacuum and differential temperatures. _____

[10] **PRIOR** to backwash, **ADJUST** hydrogen flow to 15 SCFM in accordance with PNPS 10.2.4. **[CY.3-1]** _____

(a) **NOTIFY** Radiation Protection of the change in hydrogen flow to 15 SCFM. _____

(b) **NOTIFY** Chemistry of the change in hydrogen flow to 15 SCFM. _____

[11] **RECORD** initial data on Attachment 9 (Condenser Backwash Data Sheet). _____

1.0 INITIAL CONDITIONS (Continued)

CAUTION

Opening and/or closing of the Main Condenser Vapor Valves (AO-3703, AO-3704, AO-3710, and AO-3711) can affect dose rates and impact personnel exposure if work is taking place near any offgas process piping (Recombiner Room, Condenser Bay, and AOG 5' elevation).

Initials

[12] **PRIOR** to opening/closing any Main Condenser Vapor Valve (AO-3703, AO-3704, AO-3710, and/or AO-3711) in this Attachment, **NOTIFY** Radiation Protection. _____

2.0 THERMAL BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP "A" - HEAT TREATING

Initials

[1] **OPERATE** Screenwash System with all available screens running in the forward direction (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation). _____

[2] **PRIOR** to backwash, **RECORD** Circulating Water Pump amps. _____

P-105A amps _____ P-105B amps _____

[3] **OPEN/VERIFY OPEN** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

[4] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

2.0 THERMAL BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP "A" - HEAT TREATING (Continued)

NOTE

Steps [5] and [6] must be performed together.

CAUTION

During initial entry into a Main Condenser backwash alignment, Condensate Demineralizer Conductivity HI alarms at Panel C904R may be experienced due to time delays associated with instrument temperature compensation. If the observed conductivity rise persists for greater than 5 minutes, then enter PNPS 2.4.33.

Initials

[5] **CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[6] **WHEN** the first white light (12 to 18% OPEN position) comes on in Step [5], **THEN STOP** Seawater Pump A, P-105A. _____

[7] **IF** Seawater Pump A, P-105A, is required to be isolated, **THEN PERFORM** the following (**IF** not required, **ENTER** "N/P"):

(a) **CLOSE/VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703 _____
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711 _____

(c) **TAG OUT** Seawater Pump A, P-105A. _____

(d) **WHEN** maintenance is complete, **DE-TAG** Seawater Pump A, P-105A. _____

2.0 THERMAL BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP "A" - HEAT TREATING (Continued)

Initials

[8] **OPERATE** screens C and D on FAST speed in the reverse direction or as directed by the SM. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[9] **OPEN** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[10] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

[11] **OPEN/VERIFY OPEN** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A West Side Off Gas Valve SV-3703 _____
- AO-3711, Cndsr B East Side Off Gas Valve SV-3711 _____

BACKWASH IS NOW ESTABLISHED

[12] **NOTIFY** Chemistry to perform a pH analysis of the Seawater Intake during a thermal backwash for the NPDES permit. _____

NOTES

1. EPA NPDES Permit limit for thermal backwash discharge at intake is 120°F for no more than 3 hours duration twice per week.
2. Points can also be checked on TSU-3400 on Panel C4.

2.0 THERMAL BACKWASHING 1-2 AND 1-4 INLET WATER BOXES THROUGH PUMP "A" - HEAT TREATING (Continued)

CAUTIONS

1. While backwashing at this elevated temperature, check that the outlet temperature from Seawater Pump "A" (CWS002 and/or CWS020) does not exceed 118°F or increase to a point where vacuum could deteriorate to below 26" Hg. Increases in the inlet temperature to the active SSW bay (TI-38017) and in-service Seawater Pump (CWS018/CWS004) should not exceed 5°F over prebackwash ambient temperature or a maximum of 74.1°F.
2. Operating with Condenser vacuum ≤ 26" Hg for greater than 1 hour can cause water problems with the AOG System and the SJAE Radiation Monitors.

Initials

[13] **CAUTIOUSLY INCREASE** Reactor power to raise outlet temperature of "A" Pump (CWS002 and/or CWS020) to between 105°F and 118°F. _____

(a) **CLOSELY MONITOR** Condenser vacuum **AND TERMINATE** power increase when vacuum starts decreasing so as not to reduce vacuum below 26" Hg. _____

[14] **RECORD** Circulating Water Pump amps at elapsed times of 15 and 30 minutes. _____

P-105B amps (15 min): _____ (30 min): _____

[15] **BACKWASH** until screens C and D are clean with no debris coming over the screens and point CWS020 or CWS002 indicates a temperature of between 105°F and 118°F for at least 30 minutes. (**REFER TO** Attachment 12.) _____

[16] **HAVE** the field Operator complete the second half of Attachment 9 (Condenser Backwash Data Sheet). _____

[17] **WHEN** backwash is complete, **THEN REDUCE** Reactor power in accordance with PNPS 2.1.14 to a level acceptable for returning from backwash as determined by the CRS/SM while constantly monitoring Main Condenser vacuum. _____

2.1 Multiple Backwashes of the 1-2 and 1-4 Inlet Water Boxes

NOTE

If desired, placing the Condenser into and out of backwash may improve mussel removal from the tube sheet.

Initials

[1] **IF** desired to perform multiple backwash alignments, **THEN PERFORM** the following (**IF** not performed, **ENTER** "N/P"):

(a) **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

(b) **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

(c) **REPEAT** Steps 2.1[1](a) and (b), as necessary, to clean the 1-2 and 1-4 Inlet Water Boxes. _____

2.2 Returning Thermal Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A)

Initials

[1] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

[2] **CLOSE** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[3] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

[4] **STOP** reverse rotation of screens C and D **AND** **OPERATE** screens C and D in the forward direction. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[5] **IF** Seawater Pump A, P-105A, is required to be isolated, **THEN** **PERFORM** the following (**IF** not required, **ENTER** "N/P"):

(a) **VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3703, Cndsr A, West Side Off Gas Valve SV-3703 _____
- AO-3711, Cndsr B, East Side Off Gas Valve SV-3711 _____

(c) **TAG OUT** Seawater Pump A, P-105A. _____

2.2 Returning Thermal Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A) (Continued)

Initials

(d) **WHEN** maintenance is complete, **DE-TAG** Seawater Pump B, P-105A. _____

[6] **OPEN** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[7] **WHEN** either Water Box Inlet Valve MO-3873 **OR** MO-3871 indicates 12 to 18% OPEN, **THEN START** Seawater Pump A, P-105A. _____

[8] **OPEN/VERIFY OPEN** the following Water Box Inlet Valves:

- MO-3873 (Water Box #2 Inlet Valve) _____
- MO-3871 (Water Box #4 Inlet Valve) _____

[9] **OPEN/VERIFY OPEN** the following Condenser Offgas Vapor Valves:

(a) AO-3703, CNDSR A WEST SIDE OFFGAS VALVE (SV-3703, Water Box 1-2) _____

(b) AO-3710, CNDSR A WEST SIDE OFFGAS VALVE (SV-3710, Water Box 1-1) _____

(c) AO-3704, CNDSR B EAST SIDE OFFGAS VALVE (SV-3704, Water Box 1-3) _____

(d) AO-3711, CNDSR B EAST SIDE OFFGAS VALVE (SV-3711, Water Box 1-4) _____

[10] **ALLOW** all seawater and cooling water temperatures to stabilize before continuing. _____

2.2 Returning Thermal Backwash of 1-2 and 1-4 Inlet Water Boxes (Pump A) (Continued)

CAUTION

Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

Initials

[11] **WHEN** notified by the Control Room, **OPEN** East SSW Sluice Gate (X-367A). _____

[12] **RECORD** Circulating Water Pump amps after backwash. _____

P-105A amps _____ P-105B amps _____

[13] **IF** not continuing with the thermal backwash of 1-1 and 1-3 Inlet Water Boxes (through Pump B), **THEN PERFORM** the following:

(a) **TERMINATE** the special log. _____

(b) **ATTACH** the special log to this Procedure. _____

(c) **CONTINUE** with Section 4.0 of this Attachment. _____

3.0 THERMAL BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B - HEAT TREATING

CAUTIONS

1. Failure to do the following step may lead to pump damage as well as loss of cooling water to the RBCCW and TBCCW heat exchangers. Always check from this point on that at least two sluice gates to the SSW Pumps are always open.
2. Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

Initials

[1] **PRIOR** to backwash, **ADJUST** hydrogen flow to 15 SCFM in accordance with PNPS 10.2.4. **[CY.3-1]** _____

(a) **NOTIFY** Radiation Protection of the change in hydrogen flow to 15 SCFM. _____

(b) **NOTIFY** Chemistry of the change in hydrogen flow to 15 SCFM. _____

[2] **VERIFY OPEN OR OPEN** the Rear SSW Sluice Gate (X-367C). _____

[3] **WHEN** notified by the Control Room, **CLOSE** the West SSW Sluice Gate (X-367B). _____

[4] **OPERATE** Screenwash System with all available screens running in the forward direction (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation). _____

[5] **PRIOR** to backwash, **RECORD** Circulating Water Pump amps. _____

P-105A amps _____ P-105B amps _____

[6] **OPEN/VERIFY OPEN** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

3.0 THERMAL BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B - HEAT TREATING (Continued)

Initials

[7] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

NOTE

Steps [8] and [9] must be performed together.

CAUTION

During initial entry into a Main Condenser backwash alignment, Condensate Demineralizer Conductivity HI alarms at Panel C904R may be experienced due to time delays associated with instrument temperature compensation. If the observed conductivity rise persists for greater than 5 minutes, then enter PNPS 2.4.33.

[8] **CLOSE** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[9] **WHEN** the first white light (12 to 18% OPEN position) comes on in Step [8], **THEN STOP** Seawater Pump B, P-105B. _____

3.0 THERMAL BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B - HEAT TREATING (Continued)

Initials

[10] **IF** Seawater Pump B, P-105B, is required to be isolated, **THEN PERFORM** the following (**IF** not required, **ENTER** "N/P"):

(a) **CLOSE/VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710 _____
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704 _____

(c) **TAG OUT** Seawater Pump B, P-105B. _____

(d) **WHEN** maintenance is complete, **DE-TAG** Seawater Pump B, P-105B. _____

[11] **OPERATE** screens A and B on FAST speed in the reverse direction or as directed by the SM. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[12] **OPEN** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[13] **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

3.0 THERMAL BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B - HEAT TREATING (Continued)

Initials

[14] **OPEN/VERIFY OPEN** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A West Side Off Gas Valve SV-3710 _____
- AO-3704, Cndsr B East Side Off Gas Valve SV-3704 _____

BACKWASH IS NOW ESTABLISHED.

[15] **NOTIFY** Chemistry to perform a pH analysis of the Seawater Intake during a thermal backwash for the NPDES permit. _____

NOTE

1. EPA NPDES Permit limit for thermal backwash discharge at intake is 120°F for no more than 3 hours duration twice per week.
2. Points can also be checked on TSU-3400 on Panel C4.

CAUTIONS

1. While backwashing at this elevated temperature, check that the outlet temperature from Seawater Pump B (CWS018/CWS004) does not exceed 118°F or increase to a point where vacuum could deteriorate to below 26" Hg. Increase in the inlet temperature to the active SSW bay (TI-38016) and in-service Seawater Pump (CWS002/CWS020) should not exceed 5°F over prebackwash ambient or a maximum of 74.1°F.
2. Operating with Condenser vacuum ≤ 26" Hg for greater than 1 hour can cause water problems with the AOG System and the SJAE Radiation Monitors.

[16] **CAUTIOUSLY INCREASE** Reactor power to raise outlet temperature of "B" Pump (CWS018 and/or CWS004) to between 105°F and 118°F. _____

(a) **CLOSELY MONITOR** Condenser vacuum **AND TERMINATE** power increase when vacuum starts decreasing so as not to reduce vacuum below 26" Hg. _____

3.0 THERMAL BACKWASHING 1-1 AND 1-3 INLET WATER BOXES THROUGH PUMP B - HEAT TREATING (Continued)

Initials

[17] **RECORD** Circulating Water Pump amps at elapsed times of 15 and 30 minutes. _____

P-105A amps (15 min): _____ (30 min): _____

[18] **BACKWASH** until screens A and B are clean with no debris coming over the screens and point CWS018 or CWS004 indicates a temperature between 105°F and 118°F for at least 30 minutes. (**REFER TO** Attachment 12.) _____

[19] **HAVE** the field Operator complete the second half of Attachment 9 (Condenser Backwash Data Sheet). _____

[20] **WHEN** backwash is complete, **THEN REDUCE** Reactor power in accordance with PNPS 2.1.14 to a level acceptable for returning from backwash as determined by the CRS/SM while constantly monitoring Main Condenser vacuum. _____

3.1 Multiple Backwashes of the 1-1 and 1-3 Inlet Water Boxes

NOTE

If desired, placing the Condenser into and out of backwash may improve mussel removal from the tube sheet.

Initials

[1] **IF** desired to perform multiple backwash alignments, **THEN PERFORM** the following (**IF** not performed, **ENTER** "N/P"):

(a) **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

(b) **FULLY CLOSE** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

(c) **REPEAT** Steps 3.1[1](a) and (b), as necessary, to clean the 1-1 and 1-3 Inlet Water Boxes. _____

3.2 Returning from Thermal Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump B)

Initials

[1] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3883 (Water Box #2 Outlet Valve) _____
- MO-3881 (Water Box #4 Outlet Valve) _____

[2] **CLOSE** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[3] **FULLY OPEN** the following Water Box Outlet Valves:

- MO-3882 (Water Box #1 Outlet Valve) _____
- MO-3880 (Water Box #3 Outlet Valve) _____

[4] **STOP** reverse rotation of screens A and B **AND** **OPERATE** screens A and B in forward direction. (**SEE** base document Sections 7.8.2 and 7.8.3 of this Procedure for Screenwash System operation.) _____

[5] **IF** Seawater Pump B, P-105B, is required to be isolated, **THEN** **PERFORM** the following (**IF** not required, **ENTER** "N/P"):

(a) **VERIFY CLOSED** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

(b) **CLOSE** the following vapor valves to the steam jet air ejectors:

- AO-3710, Cndsr A, West Side Off Gas Valve SV-3710 _____
- AO-3704, Cndsr B, East Side Off Gas Valve SV-3704 _____

(c) **TAG OUT** Seawater Pump B, P-105B. _____

3.2 Returning from Thermal Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump B) (Continued)

Initials

(d) **WHEN** maintenance is complete, **DE-TAG** Seawater Pump B, P-105B. _____

[6] **OPEN** the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates):

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[7] **WHEN** either Water Box Inlet Valve MO-3872 **OR** MO-3870 indicates 12 to 18% OPEN, **THEN START** Seawater Pump B, P-105B. _____

[8] **FULLY OPEN/VERIFY OPEN** the following Water Box Inlet Valves:

- MO-3872 (Water Box #1 Inlet Valve) _____
- MO-3870 (Water Box #3 Inlet Valve) _____

[9] **OPEN/VERIFY OPEN** the following Condenser Offgas Vapor Valves:

(a) AO-3703, CNDSR A WEST SIDE OFFGAS VALVE (SV-3703, Water Box 1-2) _____

(b) AO-3710, CNDSR A WEST SIDE OFFGAS VALVE (SV-3710, Water Box 1-1) _____

(c) AO-3704, CNDSR B EAST SIDE OFFGAS VALVE (SV-3704, Water Box 1-3) _____

(d) AO-3711, CNDSR B EAST SIDE OFFGAS VALVE (SV-3711, Water Box 1-4) _____

[10] **ALLOW** all seawater and cooling water temperatures to stabilize before continuing. _____

3.2 Returning from Thermal Backwash of 1-1 and 1-3 Inlet Water Boxes (Pump B) (Continued)

CAUTION

Do not use the portable operator to seat or unseat the sluice gate. The first and last inch of gate travel should be accomplished with the hand crank.

Initials

[11] **WHEN** notified by the Control Room, **OPEN** West SSW Sluice Gate (X-367B). _____

[12] **RECORD** Circulating Water Pump amps after backwash. _____

P-105A amps _____ P-105B amps _____

[13] **TERMINATE** special log **AND ATTACH** it to this Procedure. _____

[14] **CONTINUE** with Section 4.0 of this Attachment. _____

4.0 SEAWATER SYSTEM THERMAL BACKWASH RESTORATION

Initials

[1] **CLOSE** the following Outlet Crossover Valves:

- MO-3866 (Outlet Xover Valve for 1-1 and 1-2 Water Boxes) _____
- MO-3876 (Outlet Xover Valve for 1-3 and 1-4 Water Boxes) _____

[2] **ALIGN/VERIFY ALIGNED** the SSW sluice gates as follows:

(a) West Sluice Gate (X-376B) OPEN _____

(b) East Sluice Gate (X-376A) OPEN _____

(c) Rear Sluice Gate (X-376C) CLOSED _____

[3] **OPEN/VERIFY OPEN** the following valves:

- 27-HO-3, Scavenger Line from Condenser 1-1 Outlet Water Box Block Valve _____
- 27-HO-4, Scavenger Line from Condenser 1-2 Outlet Water Box Block Valve _____
- 27-HO-7, Scavenger Line from Condenser 1-3 Outlet Water Box Block Valve _____
- 27-HO-8, Scavenger Line from Condenser 1-4 Outlet Water Box Block Valve _____
- 27-HO-9, Scavenger to Water Box Vacuum Control Tank Block Valve _____

[4] **PLACE** the SSW **AND** SW Hypochlorination System in service in accordance with PNPS 2.2.95. _____

- **ENSURE** SSW Hypochlorination System status changes are logged in the CRS logbook. _____
- **ENSURE** Chemistry is notified of SSW Hypochlorination System status changes. _____

[5] **CLEAR** the Caution Tag on the hydrogen controller in service **AND RESTORE** hydrogen injection flow to normal in accordance with PNPS 10.2.4. _____

4.0 SEAWATER SYSTEM THERMAL BACKWASH RESTORATION (Continued)

Initials

[6] **PERFORM** Attachment 13 (Seawater System Backwash Restoration Verification) **AND ATTACH** to this Procedure. _____

[7] **VERIFY** the following:

(a) Backwash complete. _____

(b) Screenwash System returned to Normal/Standby lineup. _____

(c) Hypochlorination System in service in accordance with PNPS 2.2.95. _____

(d) Attachment 8/Special Log reviewed and attached. _____

(e) All required data has been recorded on the appropriate copies of Attachment 9 and attached. _____

(f) Hydrogen injection restored to normal flow rate. _____

(g) Attachment 13 (Seawater System Backwash Restoration Verification) complete. _____

(h) Attachment 7 (Thermal Backwash of the Main Condenser) complete. _____

[8] Backwash completed and all Attachments/Special Log reviewed.

_____ _____
On-Shift SRO Date

[9] **FORWARD** a copy of this Attachment and all Attachment 9 forms to the Mechanical/Civil/Structural Engineering System Engineer.

_____
OA Init.

CONDENSER COOLING WATER TEMPERATURE DATA SHEET

Date: _____

	Inlet °F		Condenser Outlet T °F 1-1	1-2	1-3	1-4	Ave Inlet Temp °F	Ave Outlet Temp °F	Ave Temp Differential	C054H	C055H
TSU-3400A Point ID	1	2	4	3	6	5	(points 1 + 2) / 2	(points 3+4+5+6) / 4	Ave Outlet - Ave Inlet		
Time											
0100											
0200											
0300											
0400											
0500											
0600											
0700											
0800											
0900											
1000											
1100											
1200											
1300											
1400											
1500											
1600											
1700											
1800											
1900											
2000											
2100											
2200											
2300											
2400											

NOTE: EPIC computer points are more accurate than the TSU-3400A at Panel C4.

TSU-3400A point 1, Circ Water Pump A Discharge
TSU-3400A point 2, Circ Water Pump B Discharge
TSU-3400A point 3, Cndsr 1-2 Circ Water Discharge
TSU-3400A point 4, Cndsr 1-1 Circ Water Discharge
TSU-3400A point 5, Cndsr 1-4 Circ Water Discharge
TSU-3400A point 6, Cndsr 1-3 Circ Water Discharge

CONDENSER BACKWASH DATA SHEET

(Use a new form for each Backwash)

CONTROL ROOM

Date: _____

Circ Water Pump
to be Backwashed:_____

SJAE Configuration: _____ _____ Primaries

_____ Secondary

Reason for Backwash (circle all that apply)

(a) High ΔT
(b) High Circ Water Pump Amps
(c) High Backpressure
(d) Storm
(e) Other (specify _____)

Time Backwash started _____

	Prior To Backwash	During Backwash (T + 15 min)	During Backwash (T + 30 min)	After Backwash
Circ Water Pump A Amps				
Circ Water Pump B Amps				

Time Backwash completed _____

FIELD OPERATOR DATA

MATERIAL OBSERVED During Backwash Evolution	OBSERVED (Check one)		*Estimate How Much (Check one for each material observed)						
	Yes	No	1 to 4 gallons	5 to 14 gallons	15 to 30 gallons	greater than 30 gallons	1 to 4	5 to 10	more than 10
Seaweed							NA	NA	NA
Shellfish (mussels, clams, etc)							NA	NA	NA
Horseshoe Crabs			NA	NA	NA	NA			

* NOTE: Accurate measurement is NOT required, a visual estimate is all that is necessary.

Recorded By:

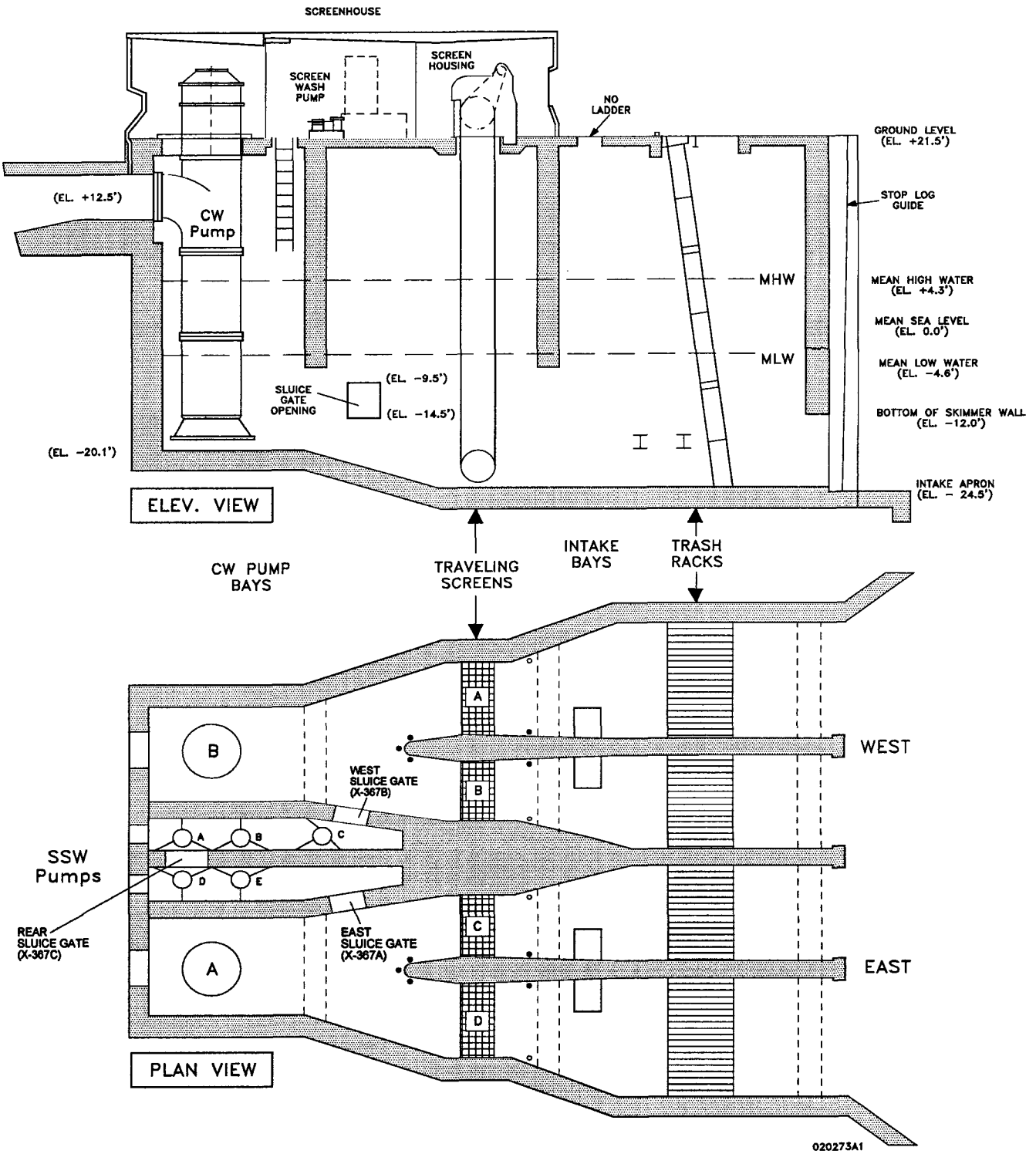
Control Room Operator _____ Date

Field Operator _____ Date

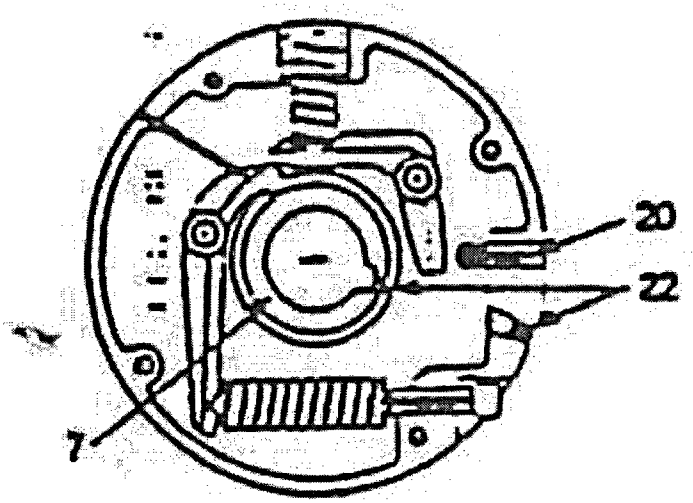
On-Shift SRO Review _____ Date

Attach this form to the Backwash Surveillance.

SCREENHOUSE DRAWING SECTION



RE-ENGAGING THE SLUICE GATE OPERATOR CLUTCH



IF the clutch on the sluice gate portable operator has released due to overload, **PERFORM** the following to re-engage the clutch:

[1] **REMOVE** the portable operator from the pinion shaft of the sluice gate actuator.

[2] **OBTAIN** the 1/4-inch Allen wrench from the Screenhouse storm inventory toolbox (reference PNPS 2.1.37).

[3] **ROTATE** the body of the clutch until the index line on the clutch housing is in line with the keyway in the clutch rotor.

[4] Holding the clutch with the index line and keyway aligned, **TURN** the setscrew (item #20) in the clockwise direction as far as it will go or until an audible click is heard.

[5] **TURN** the setscrew counterclockwise to its original position.

[6] **RETURN** the 1/4-inch Allen wrench to the Screenhouse storm inventory toolbox.

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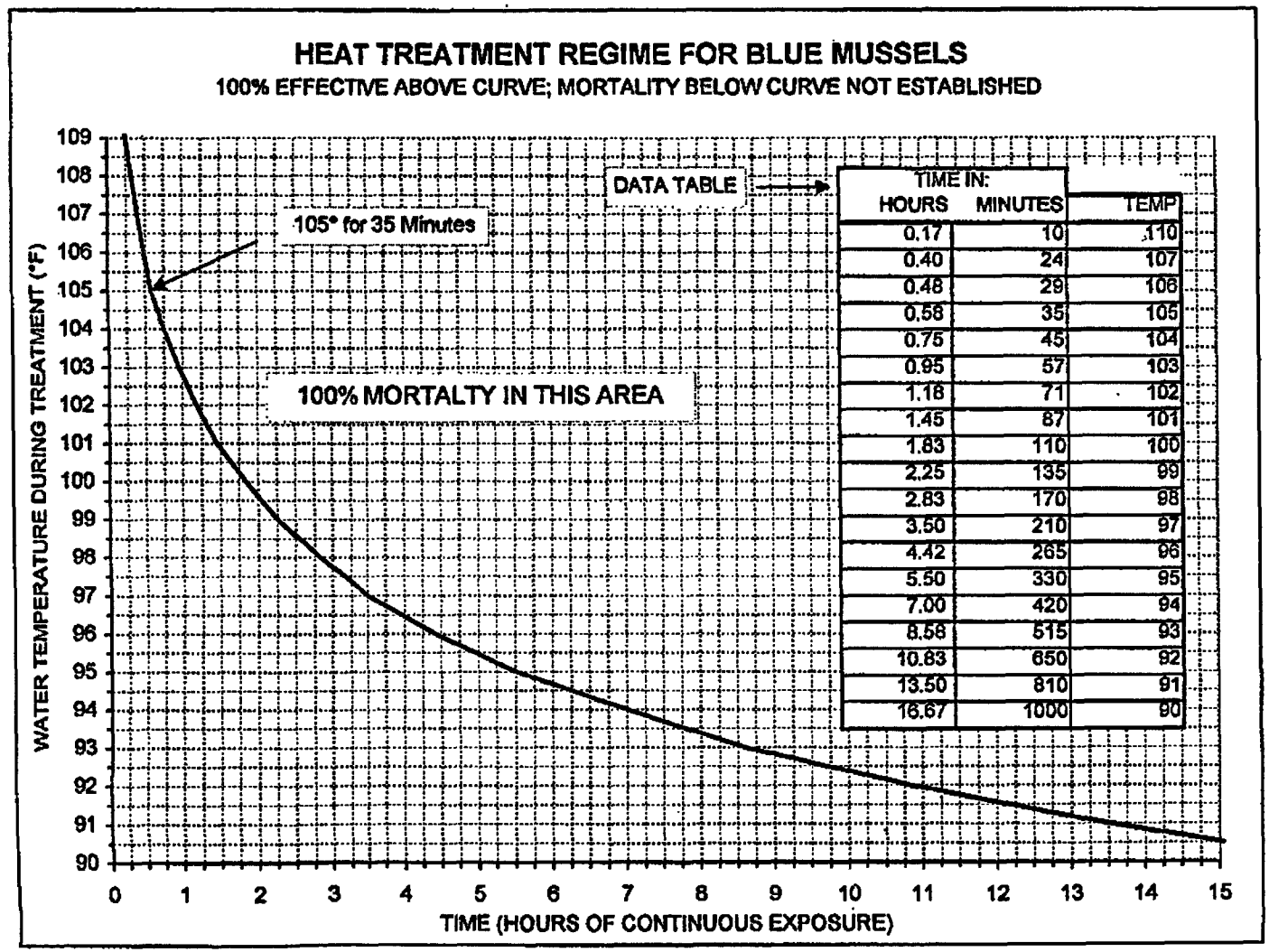

TIME IN: HOURS	MINUTES	TEMP
0.17	10	110
0.40	24	107
0.48	29	106
0.58	35	105
0.75	45	104
0.95	57	103
1.18	71	102
1.45	87	101
1.83	110	100
2.25	135	99
2.83	170	98
3.50	210	97
4.42	265	96
5.50	330	95
7.00	420	94
8.58	515	93
10.83	650	92
13.50	810	91
16.67	1000	90

020273A2 GRAPH (2) Mussel Mortality.xls

SEAWATER SYSTEM BACKWASH RESTORATION VERIFICATION

Component	Description	Position	Initials
X-367A	East Sluice Gate	Raised	
X-367B	West Sluice Gate	Raised	
X-367C	Rear Sluice Gate	Down	
27-HO-1	Scavenger Line from Cond 1-1 Inlet Water Box Block Vlv	Closed	
27-HO-2	Scavenger Line from Cond 1-2 Inlet Water Box Block Vlv	Closed	
27-HO-3	Scavenger Line from Cond 1-1 Outlet Water Box Block Vlv	Open	
27-HO-4	Scavenger Line from Cond 1-2 Outlet Water Box Block Vlv	Open	
27-HO-5	Scavenger Line from Cond 1-3 Inlet Water Box Block Vlv	Closed	
27-HO-6	Scavenger Line from Cond 1-4 Inlet Water Box Block Vlv	Closed	
27-HO-7	Scavenger Line from Cond 1-3 Outlet Water Box Block Vlv	Open	
27-HO-8	Scavenger Line from Cond 1-4 Outlet Water Box Block Vlv	Open	
27-HO-9	Scavenger Line to Water Box Vaccum Control Tank Block Vlv	Open	
MO-3865	West Condenser Inlet Water Box Crossover Valve	Closed	
MO-3866	West Condenser Outlet Water Box Crossover Valve	Closed	
MO-3870	Main Condenser Water Box #3 Seawater Inlet Valve	Open	
MO-3871	Main Condenser Water Box #4 Seawater Inlet Valve	Open	
MO-3872	Main Condenser Water Box #1 Seawater Inlet Valve	Open	
MO-3873	Main Condenser Water Box #2 Seawater Inlet Valve	Open	
MO-3875	East Condenser Inlet Water Box Crossover Valve	Closed	
MO-3876	East Condenser Outlet Water Box Crossover Valve	Closed	
MO-3880	Main Condenser Water Box #3 Seawater Outlet Valve	Open	
MO-3881	Main Condenser Water Box #4 Seawater Outlet Valve	Open	
MO-3882	Main Condenser Water Box #1 Seawater Outlet Valve	Open	
MO-3883	Main Condenser Water Box #2 Seawater Outlet Valve	Open	
P-105A	Seawater Pump "A"	Inservice	
P-105B	Seawater Pump "B"	Inservice	
SV-3703	Condenser A West Side Offgas Valve (1-2 Water Box)	Open	
SV-3704	Condenser B East Side Offgas Valve (1-3 Water Box)	Open	
SV-3710	Condenser A West Side Offgas Valve (1-1 Water Box)	Open	
SV-3711	Condenser B East Side Offgas Valve (1-4 Water Box)	Open	

List any exceptions and reason why:

_____

_____

_____

System Restoration/Verification satisfactory.

_____
On-Shift SRO Date

BLOWDOWN OF LP AND HP TRAVELING SCREEN SPRAY HEADER STRAINERS

Performed By (Operator):_____ _____ _____
Name (print) Initials Date

1.0 BLOWDOWN OF THE LP TRAVELING SCREEN SPRAY HEADER STRAINERS

[1] **ENSURE** that at least one screenwash pump is in service. _____
Initials

[2] **OPEN** the Y-strainer blowdown valve until a steady stream of clear water is observed, **THEN CLOSE** the blowdown valve (**ENTER** "N/P" for components not performed):

Traveling Screen	Valve No.	Valve Opened (✓)	Clear Water Observed (✓)	Valve Closed (✓)
X-108A	28-HO-105A			
X-108B	28-HO-105B			
X-108C	28-HO-105C			
X-108D	28-HO-105D			

2.0 BLOWDOWN OF THE HP AND LP TRAVELING SCREEN SPRAY HEADERS

Initials

[1] **ENSURE** that at least one screenwash pump is in service. _____

[2] **STOP/VERIFY STOPPED** the associated traveling screen.

[3] **CYCLE** the following valves one at a time:

(a) **OPEN** one valve listed below for 15 to 20 seconds. _____

(b) **OBSERVE** water flow out of the associated spray header. _____

(c) **CLOSE** the blowdown valve. _____

(d) **REPEAT** Step [3](a) through [3](c) until all intended valves have been cycled. _____

(e) **ENTER** "N/P" in the table below for any component not cycled. _____

[4] **RESTORE** traveling screens to service as directed by the CRS. _____

Traveling Screen	Traveling Screen Secured (✓)	Valve No.	Valve Opened (✓)	Water Flow Observed (✓)	Valve Closed (✓)	Traveling Screen Restored (✓)
X-108A		28-HO-129A				
		28-HO-129B				
		28-HO-133				
X-108B		28-HO-130A				
		28-HO-130B				
		28-HO-134				
X-108C		28-HO-131A				
		2-HO-131B				
		28-HO-135				
X-108D		28-HO-132A				
		28-HO-132B				
		28-HO-136				