

OI 62A

MOTOR-DRIVEN AUXILIARY FEEDWATER SYSTEM (P-38A & P-38B)

DOCUMENT TYPE: Technical

CLASSIFICATION: Safety Related

REVISION: 21

EFFECTIVE DATE: May 21, 2001

REVIEWER: Qualified Reviewer

APPROVAL AUTHORITY: Department Manager

PROCEDURE OWNER (title): Group Head

OWNER GROUP: Operations

Verified Current Copy: _____
Signature Date Time

List pages used for Partial Performance

Controlling Work Document Numbers

11/22

MOTOR-DRIVEN AUXILIARY FEEDWATER SYSTEM
(P-38A & P-38B)

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POINT BEACH NUCLEAR PLANT
OPERATING INSTRUCTIONS

MOTOR-DRIVEN AUXILIARY FEEDWATER SYSTEM
(P-38A & P-38B)

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- 3.17 On a loss of instrument air, the back press control valves (AF-4012 and AF-4019) are backed up by nitrogen to provide continued operation for greater than one hour. For extended operation an installed spare nitrogen cylinder must be valved in.
- 3.18 On line nitrogen cylinders should be changed out when pressure drops below 1850 psig to ensure operational design requirements are met. (Ref. CALC M-09334-266-1A.1)
- 3.19 On a loss of instrument air, the mini-recirc valves fail closed. The pumps shall NOT be run with a flow less than 50 gpm without manually gagging the valves (AF-4007 & AF-4014) open.
- 3.20 AF-4012 and AF-4019, P38A(B) AFP Discharge Control valves SHALL be set to 1200 psi whenever the valves are in AUTO, or declared inoperable.
- 3.21 The recirculation flow should be between 70 gpm and 80 gpm based on recirc orifice design.
- 3.22 The motor driven auxiliary feedwater pump is designed to deliver 200 gpm at 1192 psi with a shutoff head of 1305 psi.
- 3.23 There is a possibility that discharge MOV control switches can be placed in an "intermediate" position. Whenever the mode of operation (AUTO/MANUAL) is changed, the MOV control switch should be operated in the desired position (OPEN or SHUT), to verify the switch is NOT in the intermediate position.
- 3.24 Loss of DC power to the automatic logic is indicated by the white light near the control switches going out and 1C01A 2-8 (2-10), Auxiliary Feedwater System Disabled, alarm annunciating.
- 3.25 Motor-Driven Auxiliary Feedwater Pump Discharge MOV Modes of Operation:
- The automatic position (pushed-in) allows the valves to automatically open or shut.
 - The manual position (pulled-out) allows operator control of the valves, except that an automatic shut signal shuts the valve.
- 3.26 1C01A 2-8 (2-10), Auxiliary Feedwater System Disabled alarm annunciates whenever the control switch is in the manual (full pull-out) position. This indicates automatic actuation is restricted.

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MOTOR-DRIVEN AUXILIARY FEEDWATER SYSTEM
(P-38A & P-38B)

INITIALS

- 7.3 Operation of P-38A or P-38B, Auxiliary Feedwater Pumps - recirculation mode
- 7.3.1 IF at any time, P-38A/B AFW Pump Flow is adjusted to less than 50 gpm, THEN the associated AFW Pump must be secured OR a level 3 dedicated operator must be stationed to continuously monitor recirc flow per ATTACHMENT B
- 7.3.2 Place the appropriate discharge pressure control valve controller in MANUAL and SHUT.
- PC-4012, P-38A AFP Discharge Control.
 - PC-4019, P-38B AFP Discharge Control.
- 7.3.3 Start the appropriate pump. (C01)
- P38A, Motor Driven Aux Feed Pump.
 - P38B, Motor Driven Aux Feed Pump.
- 7.3.4 Check that the pump recirc valve opens.
(Reference P&L 3.9)
- AF-4007, P-38A AFP Mini Recirc Control.
 - AF-4014, P-38B AFP Mini Recirc Control.

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MOTOR-DRIVEN AUXILIARY FEEDWATER SYSTEM
(P-38A & P-38B)

INITIALS

7.3.5 Monitor the pump for proper operation:

- Discharge pressure. _____
- PI-4012, P-38A AFP Discharge Pressure Indicator. _____
- PI-4019, P-38B AFP Discharge Pressure Indicator. _____
- Bearing temperatures on 1TR-2000B.
 - Point 25, P-38A Inboard Pump Bearing. _____
 - Point 26, P-38A Outboard Pump Bearing. _____
 - Point 27, P-38B Inboard Pump Bearing. _____
 - Point 28, P-38B Outboard Pump Bearing. _____

7.3.6 WHEN run is complete,
THEN stop the pump. (C01)

- P-38A, Motor Driven Aux Feed Pump. _____
- P-38B, Motor Driven Aux Feed Pump. _____

7.3.7 Secure the level 3 dedicated operator stationed in step 7.3.1. _____

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OPERATING INSTRUCTIONS

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SAFETY RELATED
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MOTOR-DRIVEN AUXILIARY FEEDWATER SYSTEM
(P-38A & P-38B)

INITIALS

CAUTION

The associated AFW pump is **NOT** operable if the discharge pressure controller is in auto with a setpoint other than 1200 PSI.

7.3.8 Place the appropriate discharge pressure controller in AUTO with setpoint at 1200 psi.

- PC-4012, P-38A AFP Discharge Control.
- PC-4019, P-38B AFP Discharge Control.

IV

IV

7.3.9 Verify the discharge MOV control switch alignment.

- AUTO for operating unit (shut and pushed in).
- AF-4023, P-38A AFP Discharge to 1HX-1A Steam Generator.
- AF-4021, P-38B AFP Discharge to 1HX-1B Steam Generator.
- AF-4022, P-38A AFP Discharge to 2HX-1A Steam Generator.
- AF-4020, P-38B AFP Discharge to 2HX-1B Steam Generator.

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POINT BEACH NUCLEAR PLANT
OPERATING INSTRUCTIONS

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MOTOR-DRIVEN AUXILIARY FEEDWATER SYSTEM
(P-38A & P-38B)

INITIALS

- Per DSS for non-operating unit.
- AF-4023, P-38A AFP Discharge to 1HX-1A Steam Generator.
- AF-4021, P-38B AFP Discharge to 1HX-1B Steam Generator.
- AF-4022, P-38A AFP Discharge to 2HX-1A Steam Generator.
- AF-4020, P-38B AFP Discharge to 2HX-1B Steam Generator.

IV

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ATTACHMENT B

Level 3 Dedicated Operator at P-38A/B recirc flow meter instructions

- 1.0 Continuously monitor FIT-4050A, P-38A AFP Mini Recirc Flow Indicator AND/OR FIT-4050B, P-38B AFP Mini Recirc Flow Indicator.
- 2.0 IF indicated flow is less than 50 GPM
THEN immediately notify the Control Room.

TCN 2002-0766

OI 62B

TURBINE-DRIVEN AUXILIARY FEEDWATER SYSTEM (P-29)

DOCUMENT TYPE: Technical

CLASSIFICATION: Safety Related

REVISION: 9

EFFECTIVE DATE: August 16, 2001

REVIEWER: Qualified Reviewer

APPROVAL AUTHORITY: Department Manager

PROCEDURE OWNER (title): Group Head

OWNER GROUP: Operations

Verified Current Copy: _____
Signature Date Time

List pages used for Partial Performance

Controlling Work Document Numbers

POINT BEACH NUCLEAR PLANT
OPERATING INSTRUCTIONS

OI 62B
SAFETY RELATED
Revision 9
August 16, 2001

TURBINE-DRIVEN AUXILIARY FEEDWATER
SYSTEM (P-29)

1.0 PURPOSE

To provide instruction for proper operation of the turbine-driven auxiliary feedwater system (P-29) during the following evolutions:

- 1.1 Section 5.1, Maintaining Steam Generator Levels using P-29 - Non-Emergency Starts.
- 1.2 Section 5.2, Securing P-29.
- 1.3 Section 5.3, Resetting MS-2082 due to an Overspeed Trip.
- 1.4 Section 5.4, Locally Stopping a Turbine Driven Pump Following MS-2019 and/or 2020 Failure.
- 1.5 Section 5.5, Resetting or Overriding MS-2082 due to a Low Suction Pressure Trip.
- 1.6 Section 5.6 Perform an approximate Five Minute PMT Run of P-29 following Maintenance

2.0 PREREQUISITES

None

3.0 PRECAUTIONS AND LIMITATIONS

- 3.1 Turbine bearing oil coolers must have normal (service water) or alternate (fire water) cooling supplied to run the turbine-driven pump. Upon a loss of power, alternate cooling should be verified.
- 3.2 If a pump or turbine bearing high temperature alarm is received then:
 - 3.2.1 Check service water flow to bearing oil coolers.
 - 3.2.2 Check for proper oil levels.
 - Governor oil level gauge glass - VISIBLE
 - Governor right angle gear box sight glass - VISIBLE
 - Pump bearing oil level between the red lines on the glass
 - Turbine bearing oil available in Opto-matic oilers
 - 3.2.3 Continue monitoring temperatures.

POINT BEACH NUCLEAR PLANT
OPERATING INSTRUCTIONS

OI 62B
SAFETY RELATED
Revision 9
August 16, 2001

TURBINE-DRIVEN AUXILIARY FEEDWATER
SYSTEM (P-29)

- 3.10 To avoid lifting the suction relief valve when the pump is secured, reduce discharge flow to less than or equal to 110 gpm and check that the mini-recirc valve has opened before securing the pump.
- 3.11 The motor-driven auxiliary feedwater pumps are the preferred pumps for feeding the steam generators during normal startup, hot standby and shutdown evolutions when the main feed system is NOT available. The use of the turbine-driven auxiliary feedwater pump should be limited, if possible, to testing and abnormal or emergency situations.
- 3.12 Feedwater additions during hot standby should be performed in such a manner as to minimize the thermal stress cycles for the feedwater nozzle, i.e. continuous feed at a lower flow rate is less severe than batch feeding at a high flow rate.
- 3.13 For emergency situations, the existing criteria established in EOPs for assurance of effective auxiliary feedwater flow will continue to be followed. However, for those instances when the unaffected units turbine-driven pump is incapable of automatically delivering flow, a motor-driven pump will be returned to service as soon as possible.
- 3.14 It is possible that valves MS-2019 and/or MS-2020 could fail to operate following a design basis earthquake because these valves are only qualified for 10 minutes in harsh environments. Manual action may be needed to stop a turbine driven auxiliary feedwater pump.
- 3.15 The minimum pump flow requirement is ⁷⁵~~70~~ gpm, but it is desirable to maintain 120 gpm to increase pump life. ⁷⁵~~70~~
- 3.16 IF at any time, P-29 AFW Pump Flow is adjusted to less than ⁷⁵~~70~~ gpm, THEN the associated AFW Pump must be secured OR a level 3 dedicated operator must be stationed to continuously monitor recirc flow per ATTACHMENT B

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POINT BEACH NUCLEAR PLANT
OPERATING INSTRUCTIONS

OI 62B
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Revision 9
August 16, 2001

TURBINE-DRIVEN AUXILIARY FEEDWATER
SYSTEM (P-29)

5.6 Perform an approximate Five Minute PMT Run of an inoperable P-29 following Maintenance

5.6.1 IF the RCS is greater than or equal to 200°F,
THEN document feedwater addition on PBF-2027, Feedwater
Addition Form.

5.6.2 Defeat blowdown isolation interlock for the applicable unit
using the switch on C03. (Mark the one NOT used N/A)

- 1P-29 AFP SGBD Interlock Defeat
- 2P-29 AFP SGBD Interlock Defeat

5.6.3 IF NOT tripped,
THEN trip the turbine locally via the low suction/overspeed
trip valve MS-2082 by manually actuating the turbine
overspeed manual trip lever.

5.6.4 IF NOT shut,
THEN shut the pump discharge valves. (C03)

- AF-4000, P-29 AFP Disch SG B Inlet MOV.
- AF-4001, P-29 AFP Disch SG A Inlet MOV.

5.6.5 Check for proper oil levels.

- Governor oil level gauge glass - VISIBLE.
- Governor right angle gear box sight glass - VISIBLE.
- Pump bearing oil level between the red lines on the glass.
- Turbine bearing oil available in Opto-matic oilers.

5.6.6 Document steam release on PBF-3070, Potentially
Contaminated Steam Releases.

5.6.7 IF at any time, P-29 AFW Pump Flow is adjusted to less than
75 ~~20~~ gpm, THEN the associated AFW Pump must be secured
OR a level 3 dedicated operator must be stationed to
continuously monitor recirc flow per ATTACHMENT B

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POINT BEACH NUCLEAR PLANT
OPERATING INSTRUCTIONS

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TURBINE-DRIVEN AUXILIARY FEEDWATER
SYSTEM (P-29)

- 5.6.8 Open either steam supply valve. (C03) (Mark valve NOT used N/A.)
- MS-2019, B SG Stm Supply to P-29 AFP. _____
 - MS-2020, A SG Stm Supply to P-29 AFP. _____
- 5.6.9 Ensure AF-4002, P-29 Aux Feedwater Pump Mini Recirc Control Valve, OPENS. (C03) _____
- 5.6.10 Check PI-4458, P-29 Aux feedwater Pump Cooling Water Supply Pressure Indicator, greater than or equal to 25 psi. _____
- 5.6.11 Allow moisture to be blown out of steam supply. _____
- 5.6.12 Shut MS-126, P-29 Aux Feed Pump Steam Supply Inlet. _____
- 5.6.13 IF NOT reset,
THEN reset the low suction/overspeed trip valve, MS-2082 per Step 5.3, Resetting MS-2082 due to an Overspeed Trip. _____
- 5.6.14 Raise the pump up to speed over a period of approximately 2 minutes by throttling MS-126, P-29 Aux Feed Pump Steam Supply Inlet OPEN. _____
- 5.6.15 Notify Control to record the start time in the control room logbook. _____
- 5.6.16 WHEN the governor takes over,
THEN open AND red lock MS-126, P-29 Aux Feed Pump Steam Supply Inlet. _____

POINT BEACH NUCLEAR PLANT
OPERATING INSTRUCTIONS

OI 62B
SAFETY RELATED
Revision 9
August 16, 2001

TURBINE-DRIVEN AUXILIARY FEEDWATER
SYSTEM (P-29)

5.6.17 Monitor the pump/turbine for proper operation.

- FI-4002, P-29 AFP Discharge Flow (C03). _____
- PI-4005, P-29 AFP Discharge Press (C03). _____
- TR 2000 B-17 Point, Inboard Pump Bearing. _____
- TR 2000 B-18 Point, Outboard Pump Bearing. _____
- TR 2000 B-19 Point, Outboard Turbine Bearing. _____
- TR 2000 B-20 Point, Inboard Turbine Bearing. _____

5.6.18 AFTER approximately five minutes,
THEN secure P-29 as follows:

- a. IF C03 E1 3-2, Loss Of FW Turbine Trip, first out annunciator is lit,
THEN depress Loss Of Turbine Trip Reset pushbutton. (C03) (Mark N/A if NOT required.) _____

NOTE: The following step will cause C01A 2-8 (2-10), Unit 1(2) Auxiliary Feedwater System Disabled annunciator to alarm.

- b. Shut the steam supply valves to STOP the pump. (Mark any valve NOT used N/A.)
- MS-2019, B SG Stm Supply to P-29 AFP. _____
IV
 - MS-2020, A SG Stm Supply to P-29 AFP. _____
IV
- c. Return the steam supply valves control switches to AUTO.
- MS-2019, B SG Stm Supply to P-29 AFP. _____
IV
 - MS-2020, A SG Stm Supply to P-29 AFP. _____
IV

POINT BEACH NUCLEAR PLANT
OPERATING INSTRUCTIONS

OI 62B
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Revision 9
August 16, 2001

TURBINE-DRIVEN AUXILIARY FEEDWATER
SYSTEM (P-29)

- d. Record the stop time in the control room logbook. _____
- e. Ensure the discharge valves, are in the required positions per the local plaques. (C03)

- AF-4000, P-29 AFP Disch SG B Inlet MOV. _____

IV

- AF-4001, P-29 AFP Disch SG A Inlet MOV. _____

IV

5.6.19 Secure the level 3 dedicated operator stationed in step 5.6.7 _____

5.6.20 IF desired,
THEN perform the following:

- a. Declare P-29 OPERABLE due to resetting the low suction/overspeed trip valve MS-2082 AND demonstrating ability of P-29 to obtain required speed. _____

b. Exit TS: 3.7.5 Action Condition. _____

5.6.21 IF blowdown isolation interlock switch is ON,
THEN Enable blowdown isolation by placing the switch to OFF. (N/A the one NOT used)

- 1P-29 AFP SGBD Isolation Defeat. _____

IV

- 2P-29 AFP SGBD Isolation Defeat. _____

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ATTACHMENT A

Level 3 Dedicated Operator at P-29 recirc flow meter instructions

- 1.0 Continuously monitor 1FIT-4049, 1P-29 AFP Mini Recirc Flow Indicator
OR 2FIT-4049, 2P-29 AFP Mini Recirc Flow Indicator.
- 2.0 IF indicated flow is less than 75 GPM
THEN immediately notify the Control Room.

TN 2002-0765

POINT BEACH NUCLEAR PLANT
INSERVICE TESTS

IT 08A
SAFETY RELATED
Revision 29
August 23, 2002

COLD START OF TURBINE-DRIVEN AUXILIARY FEED
PUMP AND VALVE TEST (QUARTERLY)
UNIT 1

- 3.5 Low suction pressure condition causes a common suction pressure alarm (C01 A 4-9, Aux Feed Pump Suction Pressure Low), and a low suction pressure trip of 1MS-2082, 1P-29 AFP Overspeed Trip Valve, with an attendant alarm (1C03 1D 3-8, 1P-29 AFP Low Suction Pressure Trip).
- 3.6 If at any time pump suction pressure is less than the NPSH required, (6.5 psig) this test must be discontinued until problem is corrected.
- 3.7 If the as-found position of 1AF-4000, 1P-29 AFP Disch SG B Inlet MOV or 1AF-4001, 1P-29 AFP Disch SG A Inlet MOV, do NOT agree with the wall plaque position (plus or minus 1%) the test may continue; however, a action request shall be submitted. It is acceptable for the valves to be found in positions specified by other approved procedures performed in the same LCO window.
- 3.8 To prevent P-29 AFW Pump Damage, Monitor and Maintain AFW discharge AND / OR recirc flow greater than 75 GPM OR STOP 1P-29.

TSN 2002-0847

POINT BEACH NUCLEAR PLANT
INSERVICE TESTS

IT 08A
SAFETY RELATED
Revision 29
August 23, 2002

COLD START OF TURBINE-DRIVEN AUXILIARY FEED
PUMP AND VALVE TEST (QUARTERLY)
UNIT 1

INITIALS

NOTE: RCS Temperature should be monitored during this test. (B-5)

5.23 Start 1P-29, Aux Feedwater Turbine-Driven Pump, by performing the following:

5.23.1 Open AND time 1MS-2019, B SG STM Supply to 1P-29 AFP.

5.23.2 Record time to OPEN on Attachment C.

5.23.3 Check the rising stem indicator for OPEN indication AND record on Attachment C.

5.23.4 Open AND time 1MS-2020, 1HX-1A SG Header 1P-29 AFP Steam Supply MOV. Record Clock Time _____

5.23.5 Record time to OPEN on Attachment C.

5.23.6 Check the rising stem indicator for OPEN indication AND record on Attachment C.

NOTE: Due to steam quality during cold start, governor oscillations could take as long as 1 to 2 minutes to stabilize.

5.24 Observe pump comes up to speed AND governor takes control.

NOTE: 1P-29, Aux Feedwater Turbine-Driven Pump, suction pressure trip is set at 6.5 psig with a 20 second time delay.

5.25 Check 1P-29, Aux Feedwater Turbine-Driven Pump, suction pressure is greater than 6.5 psig on 1PI-4013A, 1P-29 AFP Suction Pressure Indicator.

NOTE: 1AF-4002, 1P-29 AFP Mini-Recirc CV, should remain open when the instrument air valve is returned to normal.

5.26 Open 1AF-125, 1P-29 AFP Mini Recirc AF-4002-S Outlet Isolation.

5.27 Shut 1AF-126, 1P-29 AFP Mini Recirc AF-4002-S Bypass Isolation.

5.28 Verify 1AF-4002, 1P-29 AFP Mini-Recirc CV, OPEN.

CAUTION

To prevent damage to P-29 Monitor and maintain AFW discharge and or recirc flow greater than 75 GPM OR Stop the pump.

TCN-2002-0847

TEST OF ELECTRICALLY-DRIVEN AUXILIARY FEED
PUMPS AND VALVES (QUARTERLY)

3.0 PRECAUTIONS AND LIMITATIONS

- 3.1 If there is any problem in performing this test, then immediately notify the duty shift superintendent. Operation of this equipment is a technical specification requirement.
- 3.2 Injection of auxiliary feed to steam generators at power will cause an increase in reactor power. RTO calculation does NOT account for auxiliary flow and is therefore unreliable. Use of DTP and Nuclear Instruments is mandatory during that time. (B-2)
- 3.3 Do NOT perform more than one portion of this test at a time.
- 3.4 Low suction pressure causes a common suction pressure alarm and a low suction pressure trip with an attendant alarm and a trip-enabled light. This trip is reset by placing the control switch to PULLOUT and then to the desired position. Reset is verified by the trip-enabled light being extinguished.
- 3.5 For the purpose of valve stroke testing, the stroke time is the time it takes the valve to go from full open to full shut or full shut to full open, by control board indication. Timing of valve operation will be from the moment of control switch actuation until the desired position is indicated. Local Position Indication Testing (PIT) requires at-valve observation.
- 3.6 The operability determination of a valve shall only be made in the direction which is required for the valve to perform its safety related functions. Valve stroking in a direction NOT required by the IST program is identified by "For Information Only" within the body of the step.
- 3.7 To test a given train or component of the train, the opposite trains normal off-site power is operable and standby emergency power is capable of supplying power.
- 3.8 If, at any time, pump suction pressure is less than the NPSH required (4.8 psig), then discontinue this test until the problem is corrected.
- 3.9 Fire rounds are NOT required during testing.
- 3.10 To prevent damage to P-38A and P-38B monitor and maintain AFW discharge and / or recirc flow greater than 50 GPM OR Stop respective AFW pump.

TCN 2002-0851

POINT BEACH NUCLEAR PLANT
INSERVICE TESTS

IT 10
SAFETY RELATED
Revision 45
September 9, 2002

TEST OF ELECTRICALLY-DRIVEN AUXILIARY FEED
PUMPS AND VALVES (QUARTERLY)

INITIALS

CAUTION

If, at any time, equipment operation appears abnormal, secure the pump.

NOTE: C01A 2-8 and 2-10, Auxiliary Feedwater System Disabled,
annunciator will clear when P-38A is removed from PULLOUT.

5.14 Start P-38A.

Time Start _____

NOTE: P-38A suction pressure trip is set at 6.5 psig (with a 20 second time delay).

5.15 Verify P-38A suction pressure as read on PI-4010A is greater than the 7.0 psig low suction pressure alarm setpoint. Record on Attachment B.

5.16 Check AF-4007, P-38A AFP Mini-Recirc Control, mini-recirculation valve open.

NOTE: The following step satisfies full stroke exercising of AF-115, P-38A Minimum Flow Check Valve.

5.17 Check mini-recirculation flow equal to or greater than 70 gpm on FIT-4050A AND record on Attachment B.

5.18 Check the packing glands for excessive leakage or overheating.

5.19 Check pump and motor for unusual noise or overheating.

5.20 WHEN P-38A has run for two-minutes,
THEN record the following on Attachment B.

- PI-4011, Pump Discharge Pressure.
- PI-4010A, Pump Suction Pressure.
- Recirculation Flow Vibration Data.

CAUTION

To prevent damage to P-38A monitor and maintain AFW discharge and / or recirc flow greater than 50 GPM OR STOP P-38A.

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8. This procedure is entered from the following procedures if RCS subcooling or PZR level cannot be maintained:
 - o EOP-0.1 UNIT 2, REACTOR TRIP RESPONSE, FOLDOUT
 - o EOP-0.2 UNIT 2, NATURAL CIRCULATION COOLDOWN, FOLDOUT
 - o EOP-0.3 UNIT 2, NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL (WITH RVLIS), FOLDOUT
 - o EOP-0.4 UNIT 2, NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL (WITHOUT RVLIS), FOLDOUT
9. This procedure is entered from the following procedures when power is restored to a 480 Vac safeguards bus prior to placing ECCS components in pull-out:
 - o ECA-0.0 UNIT 2, LOSS OF ALL AC POWER, Step 16
 - o ECA-0.0 UNIT 2, LOSS OF ALL AC POWER, Step 26
10. This procedure is entered from other plant procedures when a reactor trip or safety injection has occurred.

C. REFERENCES

1. Technical Specifications for Point Beach Nuclear Plant
2. Final Safety Analysis Report for Point Beach Nuclear Plant
3. As-built plant drawings
4. Generic Technical Guidelines developed by the Westinghouse Owners Group (WOG). This consists of the following documents:
 - a. Low pressure version of the WOG Optimal Recovery Guidelines, Status Trees, and Functional Restoration Guidelines
 - b. Background documents for each low pressure version Optimal Recovery Guideline, Status Tree, and Functional Restoration Guideline
 - c. WOG Emergency Response Guideline Executive Volume
 - d. WOG Emergency Response Guideline Maintenance Program Summary
5. Calculation 97-0126, Service Water System LOCA - Recirculation Phase

1. RCP TRIP CRITERIA

IF all conditions listed below occur, THEN trip both RCPs:

- RCS subcooling - LESS THAN [60°F] 30°F
- SI pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW
- Operator controlled cooldown - NOT IN PROGRESS

2. FAULTED S/G ISOLATION CRITERIA

IF any S/G pressure trending lower in an uncontrolled manner OR any S/G completely depressurized, THEN the following may be performed:

- a. Isolate feed flow to faulted S/G.
- b. Maintain total feed flow greater than or equal to 200 gpm until narrow range level in at least one S/G is greater than [51%] 29%.

3. RUPTURED S/G ISOLATION CRITERIA

IF any S/G level rises in an uncontrolled manner OR any S/G has abnormal radiation, AND narrow range level in affected S/G(s) is greater than [51%] 29%, THEN feed flow may be isolated to affected S/G(s).

4. AFW SUPPLY SWITCHOVER CRITERIA

IF CST level lowers to less than 8 feet, THEN switch to alternate AFW suction supply per AOP-23 UNIT 2. ESTABLISHING ALTERNATE AFW SUCTION SUPPLY.

5. ADVERSE CONTAINMENT CONDITIONS

IF any condition listed below occurs, THEN adverse containment setpoint values in brackets, [], shall be used:

- o Containment pressure - GREATER THAN 10 PSIG
- OR
- o Containment radiation level - GREATER THAN OR EQUAL TO 10^5 R/HR
- OR
- o Integrated dose to containment - GREATER THAN 10^6 R

6. AFW MINIMUM FLOW REQUIREMENTS

~~IF any AFW pump mini-recirc valve fails shut OR annunciator COI A-1-9, INSTRUMENT AIR HEADER PRESSURE LOW in alarm, THEN Monitor and maintain minimum AFW flow or stop the affected AFW pump as necessary to control S/G levels.~~

- o P-38A minimum flow - GREATER THAN 50 GPM
- o P-38B minimum flow - GREATER THAN 50 GPM
- o P-29 minimum flow - GREATER THAN 75 GPM

TCN-2002-0753

POINT BEACH NUCLEAR PLANT
ABNORMAL OPERATING PROCEDURE

STEAM GENERATOR TUBE LEAK

AOP-3 Unit 1
SAFETY RELATED
Revision 4 11/8/2001
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A. PURPOSE

1. This procedure provides guidance to identify the leaking steam generator, control the spread of contamination, perform a plant shutdown, isolate the leaking steam generator, and stop the leak by equalizing RCS and steam generator pressure.
2. This procedure is applicable when RCS hot leg temperature is greater than or equal to 350°F with SI accumulators in service.

B. SYMPTOMS OR ENTRY CONDITIONS

1. The following are symptoms of a steam generator tube leak:
 - a. Any of the following area and process radiation monitors alert or high alarm:
 - o 1RE-215. Air ejector radiation
 - o 1RE-219. Steam generator blowdown radiation
 - o 1RE-222. Steam generator blowdown tank radiation
 - o 1RE-231. Steam line "A" radiation
 - o 1RE-232. Steam line "B" radiation
 - o RB-225. Combined air ejector radiation
 - b. Rise in charging pump speed.
 - c. Feedwater flow lowering with steam generator level stable or rising.
 - d. Unexpected steam generator level deviation alarms.
 - e. Steam generator level rising with no change in auxiliary feedwater flow.
 - f. Steam generator chemistry samples of abnormal activity or the abnormal presence of boron.
2. This procedure may be entered from the following:
 - o AOP-1A Unit 1. REACTOR COOLANT LEAK
 - o PBF-2034. Control Room Shift Log Unit 1, when confirmed S/G tube leakage greater than 75 gpd or rate of change greater than 30 gpd within a 1 hour period.
 - o NP 3.2.4. Primary To Secondary Leak Rate Monitoring Program

FOLDOUT PAGE FOR AOP-3 Unit 1

1. SI ACTUATION CRITERIA

IF either condition listed below occurs. THEN go to Step 1:

- o RCS subcooling based on core exit thermocouples - LESS THAN 30°F
- OR
- o PZR level - CANNOT BE MAINTAINED WITHIN 10% OF PROGRAM LEVEL

2. AFW MINIMUM FLOW REQUIREMENTS

Monitor and maintain minimum AFW discharge flow or stop the affected AFW pump as necessary to control S/G levels.

- o P-38A minimum flow - GREATER THAN 50 GPM
- o P-38B minimum flow - GREATER THAN 50 GPM
- o P-29 minimum flow - GREATER THAN 75 GPM

TEN 2002-0840

3.0 PRECAUTIONS AND LIMITATIONS

3.1 If, during the performance of this ORT, any shared safeguards system or component fails to perform its intended function, further testing shall be immediately suspended and the DSS notified. The impact of the failure on the operating unit shall be analyzed before resuming this test.

3.2 This test repeatedly starts and stops P-38A&B auxiliary feedwater pumps which have published motor starting duty limits. These limits are:

Two consecutive starts are permitted when the motor is cold (stopped for two hours).
One consecutive start is permitted when the motor is at operating temperature.

Subsequent motor starts are permitted if the motor is:

3.2.1 Allowed to run 15 minutes for motor cooling, or

3.2.2 Secured for 60 minutes between start attempts.

This procedure incorporates hold points to allow P-38A&B to operate for 15 minutes prior to the next stop/start cycle.