

Nuclear Power Business Unit
PLANT MODIFICATION

PLANT MODIFICATION NO.: MR 99-029*D

INITIATION

Title: AUX FEED WATER PUMP 2P-29 MINIMUM FLOW RECIRC LINE ORIFICE

☒ QA ☐ Non-QA ☒ SR ☐ Non-SR Unit 1 ☐ Unit 2 ☒ Common ☐

CHAMPS System Code: AF - Auxiliary Feedwater EWR: 99-031

Priority: A3D Cost Estimate: _____

Project Objectives: Eliminate excessive noise and vibration attributed to erosion in orifice 2RO-4003.

Proposed Scope: Install new orifice in the AFW Pump 2P-29 minimum flow recirculation line to replace existing orifice 2RO-4003.

Initiated By: Alex Foltynowicz Date: 7/16/1999

FDGH

Design Controls and Project Controls: (Ref. NP 7.2.1, Commentary, for completion of this section.)

Check Applicable Design Controls:

- ☒ Design Input Checklist (PBF-1584)
- ☒ DUC (PBF-1606)
- ☒ Design Verification Notice (PBF-1583)
- ☒ Working Drawings
- ☒ ECRs
- ☒ Calculations
- ☐ Specifications
- ☒ Design Documentation (PBF-1585), or equivalent

Clarifications/Basis:

Check Applicable Project Controls:

- ☒ Fire Protection/Appendix R Review
- ☐ Project Team Required (indicate minimum groups to request)
- ☐ Conceptual Design Package Required
- ☐ Budget Design Project (Impact) Number
- ☐ Detailed Project Schedule
- ☐ IWP Required

Clarifications/Basis:

Assigned Project Manager: Alex Foltynowicz

FDGH: PP Foltynowicz

Date: 12/4/01

REC'D OCT 24 2002

UPDATES TO THIS FORM COVERED BY EXISTING SCR 98-0942

A/258

NUCLEAR POWER BUSINESS UNIT
PLANT MODIFICATION

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PROJECT MANAGER - ESTABLISH PROJECT TEAM

<u>Group Represented</u>	<u>Assigned Team Member</u>	<u>Group Represented</u>	<u>Assigned Team Member</u>
Radiation Protection	Carl Onesti		
Fire Protection	Bob Ladd		
Mechanical Maintenance	Brian VanderVelde		
Operations	Mike Schug		
System Engineering	John P. Schroeder		
Site QA	Jeff Polak		

FDGH Concurrence:

RD/Janich

Date: 12/4/01

PROJECT MANAGER

Indicate any additional modification package information, if any:

PROJECT MANAGER/FDGH

Indicate any clarifications or changes to design controls or project controls:

(Note: FDGH approval required if design controls or project controls relaxed)

FDGH:

N/A

Date:

UPDATES TO THIS FORM COVERED BY EXISTING SCR 98-0942

**NUCLEAR POWER BUSINESS UNIT
PLANT MODIFICATION**

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PROJECT MANAGER - CONCEPTUAL DESIGN

[Check here if not required: ☒

Provide a concise description of the conceptual design. List all attached documents which define the conceptual design. See commentary in NP 7.2.1 for additional guidance.

Conceptual Design Complete: _____
Project Manager _____ Date _____

GROUP HEAD CONCEPTUAL DESIGN REVIEW AND ACCEPTANCE

[Check here if not required: ☒

Review conceptual design. Attach comments on NPB Document Review Comment Sheet (PBF-1622 or equivalent)

<u>Group</u>	<u>Acceptance Signature</u>	<u>Date</u>	<u>Comments</u>	
Radiation Protection	_____	_____	<input type="checkbox"/> None	<input type="checkbox"/> Attached
Fire Protection	_____	_____	<input type="checkbox"/> None	<input type="checkbox"/> Attached
_____	_____	_____	<input type="checkbox"/> None	<input type="checkbox"/> Attached
_____	_____	_____	<input type="checkbox"/> None	<input type="checkbox"/> Attached
_____	_____	_____	<input type="checkbox"/> None	<input type="checkbox"/> Attached
_____	_____	_____	<input type="checkbox"/> None	<input type="checkbox"/> Attached
_____	_____	_____	<input type="checkbox"/> None	<input type="checkbox"/> Attached
_____	_____	_____	<input type="checkbox"/> None	<input type="checkbox"/> Attached
FDGH	_____	_____	<input type="checkbox"/> None	<input type="checkbox"/> Attached

UPDATES TO THIS FORM COVERED BY EXISTING SCR 98-0942

NUCLEAR POWER BUSINESS UNIT
PLANT MODIFICATION

PLANT MODIFICATION NO.: MR 99-029*D

FINAL DESIGN REVIEWS

Review final design. Attach comments on NPBU Document Review Comment Sheet (PBF-1622 or equivalent)

Group	Acceptance Signature	Date	Comments	
Radiation Protection	<i>Carl Duto</i>	11/28/01	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Attached
Fire Protection	<i>John P. Richmond</i>	11-26-2001	<input type="checkbox"/> None	<input type="checkbox"/> Attached
Mechanical Maintenance	<i>John P. Richmond</i>	12-4-01	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Attached
Operations	<i>M. Sebe</i>	12-4-01	<input type="checkbox"/> None	<input type="checkbox"/> Attached
System Engineering	<i>John P. Richmond</i>	11-26-2001	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Attached
<i>Side QA</i>	<i>John P. Richmond</i>	12/4/2001	<input type="checkbox"/> None	<input type="checkbox"/> Attached
			<input type="checkbox"/> None	<input type="checkbox"/> Attached
			<input type="checkbox"/> None	<input type="checkbox"/> Attached

INDEPENDENT REVIEW OF INSTALLATION DOCUMENTS

All design and licensing requirements have been incorporated in the installation and testing document(s).

Reviewer: *Rob Chapman* *[Signature]* Date: 12-4-01

FDGH - RELEASE

All design controls have been properly implemented and the project has been appropriately reviewed. All necessary documents are approved. This design is released for installation. Comments regarding release of this design are noted below:

FDGH: *[Signature]* Date: 12/5/01

PROJECT MANAGER - CLOSEOUT

Plant modification is complete, including submittal of all document updates in the Document Update Checklist (PBF-1606).

List all Work Order(s) used for installation:

9944189 _____

Project Manager: *Rob Chapman* *[Signature]* Date: 10-11-02

NUCLEAR INFORMATION MANAGEMENT

Microfilm the entire modification package.

AUX FEED WATER PUMP 2P-29 MINIMUM FLOW RECIRC LINE
ORIFICE
UNIT 2

Revision 0
December 4, 2001

PURPOSE

The purpose of the proposed modification is to minimize piping line noise and vibration when operating Auxiliary Feedwater (AF) pump 2P-29 in the recirculation mode. Vibration and excessive noise were attributed to turbulence and cavitation resulting from the flow condition through restrictive orifice 2RO-4003. The reduction of piping line noise and vibration will be accomplished by implementation of the recommendations of root cause evaluation RCE 99-081 and EWR 99-031, which is to replace the existing 2RO-04003.

In addition, as recommended by RCE 99-081 and CR 99-1391, a portion of the AF piping associated with RO will be replaced to facilitate oversized socket welds due to multiple occurrences of pinhole leaks. The purpose for oversized socket welds is to offer a significant high cycle fatigue improvement over standard ASME Code socket weld in vibration-critical application.

SCOPE

The scope of MR 99-029*D is to replace 2RO-4003 with a new pressure reducing orifice. In addition, pipe from the 90° elbow just downstream of 2FE-4049 to the upstream socket-weld on 2AF-53 will be replaced. The replacement piping will be welded with socket welds that are oversized in a 2/1 configuration as described in EPRI technical reports TR-107455 and TR-111188.

This modification is classified as QA, Safety-Related (SR), Seismic Class 1, although all piping downstream of 2RO-4003 is QA, non safety-related (AQ). The RO and modified piping are non-ASME class.

DESIGN INPUTS

- DG-M09, Revision 2, Design Requirements for Piping Stress Analysis, March 20, 2000.
- ASME B31.1 – 1992, Power Piping
- DG-M03, Revision 9, Bechtel Piping Class Summary, June 8, 2001.
- Wisconsin Electric Power Company, Drawing GLD M-217, Sheet 1, QA Classification Diagram Auxiliary Feedwater System QA Classification Diagram, Point Beach Nuclear Plant – Unit 1 & 2, Revision 11.
- Bechtel Drawing 6118 M-117 Sh. 1, Auxiliary Feedwater System, Revision 68.
- Bechtel Drawing P-159, Aux. F.W. From Heating Boiler Cnds. Return & Pump Recirc. To Cnds Stg. Tank 6" & 3" JG-4 Unit 1.
- Bechtel Pipe Class DB-3, Auxiliary Feedwater Piping
- Flowserve Pressure Reducing Orifice Drawing 94-16249, 2" 600# Globe Control Valve
- FSAR Section 10.2, Auxiliary Feedwater System.
- Design Basis Document DBD-01, Auxiliary Feedwater System.
- EWR 99-031, AF Pump Recirculation Noise In The Control Room

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- CR 99-1391, SCAQ on Potential Common Mode Failure Mechanism Affecting Welds In AFW Pump Recirc. Line.
- RCE 99-081, Socket Weld Failures in AF Pump Recirc. Piping
- Wisconsin Electric Power Company, Point Beach Nuclear Plant – RCE 99-081, "Socket – Weld Failures In Auxiliary Feedwater Pump Recirculation Piping".
- Bechtel Specification No. 6118-M-6, Rev. 3, "Specification For Auxiliary Feedwater Pumps Point Beach Nuclear Plant Units 1 & 2 Wisconsin-Michigan Power Company, dated 10/28/68.
- EPRI TR-111188, "Vibration Fatigue Testing of Socket Welds". Interim Report, December 1998.
- EPRI TR-107455, "Vibration Fatigue of Small Bore Socket-Welded Pipe Joints", Final Report, June 1997.

DESIGN DESCRIPTION AND ANALYSIS

This modification will replace 2RO-4003 installed in the minimum recirculation line for AF pump 2P-29, with a new type of orifice. The presently installed RO was accredited with causing flow induced cavitation, therefore, allowing for excessive noise and vibration in the AF piping system.

The proposed modification meets design, materials, fabrication, construction, and examination and testing standards of the existing installation. The proposed modification will be essentially a direct replacement for the components already installed and operational. The replacement RO will have the same function as the existing orifice, which is to provide pressure reduction and act as a pressure boundary for the AF system piping.

A comparison of the mechanical and flow performance characteristics of existing vs. new RO indicates that replacement RO is equal or better. The replacement RO will provide an improved anti-cavitation characteristics and thus will minimize hydrodynamic noise and vibration under liquid application. The original design requirements for the RO are specified in the Bechtel Specification No. 6118-M-6, Rev. 3, "Specification For Auxiliary Feedwater Pumps Point Beach Nuclear Plant Units 1 & 2 Wisconsin-Michigan Power Company, dated 10/28/68. This specification does not address design/construction specifics for this RO. It specifies that, "Each pump shall be furnished with a pressure reducing orifice to be used in conjunction with the on-off control valve in the pump recirculation piping. The orifice shall be provided with ended weld connections for installation in AF piping. If the flow through the orifice may cause erosion, special materials, such as 316 stainless steel, shall be used."

The currently installed RO, was designed and constructed by the Byron-Jackson Company (BJCO), and installed under MR 88-099. The replacement RO was procured from the Flowserve Company under P.O.# 4500429416, to the requirements of the 10 CFR 50, Appendix B, QA Program. This includes among other QA requirements, a flow calculation to demonstrate that the orifice will perform as specified. A seismic analysis and report, to demonstrate that the orifice will operate during and after a seismic event was determined not to be required for this RO because the component function is passive in nature.

The design of the new RO is different than the presently installed orifice. The existing RO uses inner orifice plates to control the flow and pressure drop across the orifice. The new RO works in a similar manner except that control of flow and pressure drop is accomplished by directing the flow through the series of close-fitting cylindrical stages, each constructed with expansion holes and intersecting circumferential channels that restrict the flow. This flow

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path of multiple restriction and enlargements reduces the pressure gradually across each trim cylinder, avoiding the sharp pressure drop typical to conventional, single-throttling orifice.

In a letter dated 3/2/2001 from Flowserve, the stated minimum recirculation flow for 2P-29 is 75 gpm, but this requires the pump to be inspected after 60 hours of operation at this flow. If the pump is operated at 130 gpm, then up to 1500 hours of service can be accumulated before maintenance is required. Based on calculation N-91-032 and stated in FSAR Section 10.2.3, the current maximum flow through the recirculation line with the control valve failed open is 126 gpm. The new orifice will be set to approximately the same flow rate (between 120 and 130 gpm), even though that this is below the 1500 hour limit. Increasing the flow would require additional analysis since it would reduce the available flow to the steam generators.

The replacement RO is contained in a 2"- 600# cast stainless steel globe valve body (ASME A 351 Type CF8M) and designed to the requirements of ASME B31.1 and ASME B16.34 - 1996 Edition. The working pressure is 1440 psig at 100 °F, meeting the Pipe Class 2"-DB-3 requirements. The flow rate of the RO can be adjusted during operation with the system pressurized. The RO will not be designed to shut-off flow. The adjusting device will be positively secured in its position using a lockwire attached to the stem and bonnet.

A hydrostatic pressure test of the replacement RO shell was performed at the Flowserve facility in accordance with ASME/ANSI B 16.34, except that the test pressure was maintained for at least 30 minutes.

In addition to RO replacement, some of the existing piping associated with RO will also be replaced. The piping to be replaced is shown on Working Drawing SK-MR-99-029*D and includes the two (2) 90° piping elbows upstream of the 2RO-4003 to the upstream socket weld on the isolation valve 2AF-53. This piping replacement is being done to simplify the installation and to allow for the installation oversized socket welds. The replacement piping and RO will be joined by socket welds which are oversized in a 2/1 configuration, as recommended by EPRI technical reports. The oversized socket weld detail is shown on Working Drawing SK-MR-99-029*D. The welds in the recirculation line that are not affected by this modification will be oversized by WO 9914184, which will simply add weld material over the existing welds. All welds in the recirculation line up to valve 2AF-53 will be oversized, with the exception of the butt welds at the FE-4049 flanges.

The design, materials, construction and, examination and testing requirements for AF piping are summarized in the Wisconsin Electric Design and Installation Guideline DG-M02. The piping to be replaced is classified as Pipe Class 2"-DB-3. This Pipe Class specifies carbon steel materials, however due to wear concerns the existing piping is stainless steel. Thus, replacement piping and piping components will be also stainless steel.

The replacement piping material for the proposed modification is ASTM A-312 Grade TP 316. The replacement piping fittings material is ASTM A-182 Grade F 304. The replacement piping is 2" Schedule 80, and the fittings are 3000# class, which will meet the pressure and temperature ratings for Pipe Class 2"-DB-3 (1440 psig at 100 °F).

The replacement RO is heavier than existing one, and it will add approximately 40 lbs to the existing AF piping system. In addition, the replacement piping assembly will have a slightly different internal length of piping than the existing piping layout. However, face-to-face length of the replacement pipe spool piece will be exactly the same as the existing one. These differences between the existing and proposed piping configurations have been addressed by the Wisconsin Electric Co. (WE) analysis which have demonstrated ASME B31.1 compliance of the modified piping. An addendum to Piping System Qualification Report WE-100070 documents this evaluation.

In addition, the flow characteristic of the replacement RO and its affect on the associated plant calculations was evaluated. This evaluation was documented in Addendum N-91-031-00-A to Calculation No. N-91-031, "1 & 2 P-29 Mini - Recirc Line System Characteristics", Rev.0 and Addendum N-91-032-00-A to Calculation No. N-91-032, "Comparison of Nominal Flow Rates from 2P-29 to 2HX-1A and 2HX-1B with the Recirc Line Open", Rev. 0. The

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results of this evaluation found that the slight differences in the flow characteristic between existing and replacement pressure reducing orifices is acceptable and does not significantly alter the above calculations results.

None of the above changes is introducing a new, unknown equipment to PBNP. Furthermore, replacement components are passive in nature when the system is operational and will be designed, installed and tested in accordance with existing procedures and controls.

To implement this modification, the portion of the AF piping will be cut at the socket weld at valve 2AF-53 and disconnected at the orifice's 2FE-4049 flange. This disassembly is shown on Sketch SK-MR-99-029*D. Piping, and pipe components removed will not be reused for this modification. The only exception is the 2FE-4049 flange and its associated pipe stub up to the first 90° elbow. This assembly will be inspected and then reused. To assure high quality of socket welds, a replacement piping spool piece (containing the new RO) will be fabricated in the shop in accordance with details provided by Working Drawing SK-MR-99-029*D.

Implementation of this modification will reduce the possibility for line noise and vibration when operating this line in the recirculation mode.

Design pressure, operating pressure, design temperature and other pertinent design parameters for RO are specified in the Data Sheet attached to the PO 4500429416.

No procedure changes result from this modification. This is a physical replacement of a RO and associated portion of the AF system. There will be no additional components added or operating modes changes that will require operating procedure changes.

Welding for this modification will be performed in accordance with welding procedure WP-7.

The RO will be tested at a calibrated flow test facility. The RO will be adjusted accordingly during this test to pass a flow of between 120 and 130 gpm at conditions that are identical to those when the 2P-29 AFP is running.

NDE requirements for the Pipe Class affected by the proposed modification are specified in DG-M02 and the original code of construction, USAS B31.1 - 1967. They require the finished socket welds to receive a Visual Examination (VT). The affected existing welds have a history of failure, therefore, in addition to VT of the final socket welds, root welds will receive VT and Liquid Penetrant Examination (PT). Piping socket welds shall be examined utilizing the acceptance criteria of ASME B31.1 - 1992.

As required by ASME B31.1, an initial service leakage test will be performed at normal operating pressure and temperature (with the 2P-29 auxiliary feedwater pump running). Additionally, flow data will be collected during the pump run to verify proper operation of the RO.

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DESIGN OUTPUT

The Installation Work Plan IWP 99-029*D will be prepared to identify installation requirements including pre-operational conditions, installation testing and post installation testing requirements. In addition, a 10 CFR 50.59 Safety Review (SCR 2001-0981) has been prepared to evaluate the proposed change to PBNP.

The following calculations were prepared to address the proposed modification:

- Flowserve Co. pressure reducing device sizing calculation (part of vendor documentation provided with orifice)
- Addendum to WE Piping System Qualification Report WE-100070
- Addendum N-91-031-00-A to WE Calculation No. N-91-031, Rev. 0
- Addendum N-91-032-00-A to WE Calculation No. N-91-032, Rev. 0

The following Installation Work Plan is associated with this modification:

- IWP 99-029*D (WO 9944189), Aux Feed Water Pump 2P-29 Minimum Flow Recirc Line Orifice - Unit 2
- WO 9950214, Welding of stub pieces onto orifice for offsite flow testing
- WO 9950215, Prefab work for MR 99-029*D

The following working drawing is associated with this modification:

- SK-MR-99-029*D, Auxiliary Feedwater System Orifice 2RO – 4003 Replacement, Unit 2

Other documents:

- 10 CFR 50.59/72.48 Safety Review, SCR 2001-0981
- Document Update Checklist, PBF-1606

NUCLEAR POWER BUSINESS UNIT
MODIFICATION REQUEST CHECKLIST

MR NUMBER 99-029*D
(WO#, if non-mod)

DOCUMENTATION UPDATE SHEET AND CLOSEOUT CHECKLIST

Required For

N/A

Acceptance
(Completion)

Closeout
(Submittal)

A. TRAINING

1. Lesson Plans
2. Plant Status Update/Just-in-Time Training
3. Training Handbook
4. Simulator Changes Initiated

B. FINAL DESIGN ORGANIZATION

1. Drawings
 - a. Pen & Ink changes and DCNs initiated for Control Room Drawings - Logics, P&IDs, 499 series elementaries.
 - b. Pen & Ink changes and DCNs initiated for Work Control Center Drawings - P&IDs
 - c. Pen & Ink changes and DCNs initiated for I&C Drawings - Reactor Protection and Safeguards Elementaries.
 - d. Master Data Book - Control Room, Work Control Center, and Local Panel - PBF-2093
 - e. Drawing Revisions - PBF-1508
 - f. New Drawings - PBF-1592
 - g. Drawings Voided - PBF-1592
 - h. Working Drawings Transferred/Voided - PBF-1592
2. Purchase Orders - (also contract numbers)
3. Specifications
4. Component Instruction Manuals (for issue, revision, deletion) - PBF-1586
5. Cable and Raceway Data Schedule Revisions - PBF-0091
6. WERLDS Data Base Revision - Design Guideline DG-E08.
7. Environmental and Seismic Qualification Documentation Updates - Ref. NP 7.7.1, NP 7.7.2.
8. FPER Revisions - NP 5.2.11
9. Update Fire Protection manual.
10. Calculations added/deleted / revised - PBF-1608
11. FSAR - change; NP 5.2.6
12. Technical Specification - change; specify section(s) affected and change request number, if known.

UPDATES TO THIS FORM COVERED BY EXISTING SCR 97-412

MR NUMBER 99-029*D
(WO#, if non-mod)

Required For

[illegible]

13. Report major changes to radwaste treatment systems with annual FSAR update per PBNP Tech Spec 15.7.8.5.
14. EPIX Update - report MR changes to the EPIX Coordinator.
15. ALARA Review - specify minutes or review document.
16. Report major changes to the containment aluminum inventory list with FSAR update.
17. DBD Revisions - PBF-1611
18. PSA Models and Documentation - PBF-1626

1. Equipment Identification - additions assigned from CHAMPS
2. Permanent Labeling - labels on new equipment; PBF-9900
3. Temporary Labeling - labels on new equipment; PBF-2074
4. Equipment Record - update to CHAMPS coordinator specify change(s); PBF-9922
5. Spare parts stocking and scrapping inputs into CHAMPS; PBF-9925, PBF-1023
6. Unused material removed from modification bin.

1. **Abnormal Operating, Normal Operating, and Refueling Procedures - PBF-0026a**
2. **Operating Instructions and Checklists - PBF-0026a**
3. **Alarm Response and RMS Alarm Setpoint and Response Books - PBF-0026a**
4. **Testing - TS, IT, ORT, other - PBF-0026a**
5. **EOPs, ECAs, CSPs - PBF-0026a**
6. **Periodic Callups - PBF-9920**
7. **Fire Protection Procedure - PBF-0026a**
8. **EOP Setpoints, EOP Instrument Uncertainty Calculations - PBF-8001**
9. **Tank Level Book - PBF-0026a**
10. **Emergency Plan and EPIPs - PBF-0026a**

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(WO#, if non-mod)

Required For

**Acceptance
(Completion)**

**Closeout
(Submittal)**

1. Maintenance Procedures/Instructions - PBF-0026a
2. ICPs - PBF-0026a
3. Setpoint Document - PBF-8001
4. Preventative Maintenance - initiate/revise CHAMPS callups;
PBF-9921/9920
5. Ensure station batteries' load profile changes are incorporated into
the appropriate discharge test RMPs.

1. Security Procedures
2. Security Plan

1. ISI Program
2. IST Program
3. Miscellaneous HX ECT/Cleaning program
4. Reactor Engineering Instructions - change; specify section(s) affected.
5. Reactor Engineering Refueling Procedures - change; specify section(s) affected.
6. Software Control - specify system affected and software change request number.
7. Component maintenance programs.
8. Governing calculations and models (e.g., SW model, DC loading, EDG loading, piping analysis, structural loading, etc.).

I. ECRs

1. ECR Final Resolution completed and approved by FDGH.
2. ECR Implementation completed.

Section	Specific Updates Required	Prior to Acceptance	Prior to Closeout	By
A.1	Lesson Plan Updates	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>TR0R 00-0412 5-10-02 RCC</u>
A.2	Mod sent to Training for JIT	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>Per email dated 5-14-02 RCC</u>
A.3	TRHB updated	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>TR0R 00-0412 5-10-02 RCC</u>
B.1.e	Revise Bechtel Drawing P-103 (if necessary)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>Not Needed 5-7-02 RCC</u>
B.1.e	Revise Bechtel Drawing P-159 (if necessary)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>DCN 2002-0754 5-10-02 RCC</u>
B.1.f	Add Flowserve RO Drawing (98-16249) to PDS 99 RCC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>DCN 2002-0450 3-19-02 RCC</u>
B.1.h	Void working Drawing SK-MR-99-029*D	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>Transmittal submitted 5-7-02 RCC</u>
B.2	P.O 4500429416 closed	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>Email sent 5-7-02 RCC</u>
B.4	Flowserve Component Manual 01708 updated	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>Updated 5-28-02 RCC</u>
B.10	Stress Analysis Report WE-100070 Addendum	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Add. D to Rev 1 3-4-02 RCC</u>
B.10	WE Calculation No. N-91-031 Addendum	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Add A to Rev 0 4-30-02 RCC</u>
B.10	WE Calculation No. N-91-032 Addendum	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Add A to Rev 0 4-30-02 RCC</u>
B.14	Notify EPIX coordinator of mod.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>Email sent 5-7-02 RCC</u>
B.17	Update DBD-01, Auxiliary Feedwater	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>DSO update submitted 9-13-02 RCC</u>
C.2	Provide Permanent Label for 2RO-4003	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>New label ordered/received 5-13-02 RCC</u>
C.3	Install Temporary Label for 2RO-4003	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Installed 4-19-02 RCC</u>
C.4	Update 2RO-4003 CHAMPS Record	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>Updates submitted 5-7-02 RCC</u>
C.6	Remove Material From Modification Bin	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>Mod Bin Not Used 5-7-02 RCC</u>
H	TR01.103 reviewed and approved	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Approved 3-15-02 RCC</u>
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	

Point Beach Nuclear Plant
10 CFR 50.59/72.48 SCREENING (NEW RULE)

SCR 2001-0981
Verify SCR number on all pages
Page 1

Title of Proposed Activity: MR 99-029*C/*D - AUX. FEED WATER PUMP 1/2P-29 MINIMUM FLOW RECIRC. LINE

Associated Reference(s) #: MR 99-029*C/*D, EWR 99-031, CR 99-1391, ASME B31.1, RCE 99-081, MR 99-029*A/*B

Prepared by: Rob Chapman
Name (Print)


Signature

Date: 12-4-01

Reviewed by: John P. Schroeder
Name (Print)


Signature

Date: 12-4-01

PART I (50.59/72.48) - DESCRIBE THE PROPOSED ACTIVITY AND SEARCH THE PLANT AND ISFSI LICENSING BASIS (Resource Manual 5.3.1)

NOTE: The "NMC 10 CFR 50.59 Resource Manual" (Resource Manual) and NEI 96-07, Appendix B, Guidelines for 10 CFR 72.48 Implementation should be used for guidance to determine the proper responses for 10 CFR 50.59 and 10 CFR 72.48 screenings.

- I.1 Describe the proposed activity and the scope of the activity being covered by this screening. (The 10 CFR 50.59 / 72.48 review of other portions of the proposed activity may be documented via the applicability and pre-screening process requirements in NP 5.1.8.) Appropriate descriptive material may be attached.

Engineering Work Request (EWR) 99-031 was initiated requesting the evaluation of high noise level and vibration present in the Auxiliary Feedwater (AF) pump recirculation lines during their operation in minimum recirculation mode. This evaluation had determined that the installed flow restricting orifices (ROs), are cavitating and causing excessive noise and vibration in the associated piping. In addition, Condition Report CR 99-1391 was initiated to address the issue of pinhole leaks in the socket welds which have developed at the existing ROs. To improve the socket weld's cycle fatigue response over standard ASME Code socket weld profile in vibration critical application the root cause evaluation RCE 99-081 recommended replacing the orifices to prevent cavitation, and increasing the size of the socket welds. This modification was already performed for the motor driven auxiliary feedwater pumps (P-38A/B) by MR 99-029*A/*B.

The purpose of the proposed modifications is to minimize piping line noise and vibration and preclude socket weld failure when operating the pump on minimum recirculation mode. MR 99-029*C and MR 99-029*D will replace the existing orifices 1RO-4003 and 2RO-4003 in the AF system with improved design orifices. In addition, portion of the AF piping associated with RO will be replaced to simplify the installation and to facilitate increasing the socket weld size. Piping will be replaced upstream of the orifice include some elbows up to and including the upstream weld on the AF pump recirculation line isolation valve 1AF-15 for pump 1P-29 and valve 2AF-53 for pump 2P-29.

The replacement ROs differ from presently installed ROs. The existing ROs have orifice plates to reduce the flow and pressure through the unit. The replacement ROs work in a similar manner except that control of flow and pressure drop is accomplished by directing the flow through the series of close-fitted cylindrical stages, each constructed with expansion holes and intersecting circumferential channels that restrict the flow. These cylinders are placed in a 600# class globe valve body with a valve stem and disk that allows adjustment of the flow setting after installation. This trim will not allow complete shutoff. The flow will be set to a nominal value of between 120 and 130 gpm, which is essentially the same as the existing orifice.

A seismic analysis and report, to determine that the orifice will operate during and after seismic event was determined by WE Seismic Qualification Group not to be required for these ROs. This determination was based on rugged design of the ROs body and pressure reducing component.

The proposed modifications will meet design, material and construction standards of the existing installation. The implementation of the proposed modifications, will not affect the overall performance of the AF system, operation or function of the AF pumps 1P-29 and 2P-29 and the ability of AF system to perform its intended safety functions.

Post modification testing will include a visual exam (VT) of all replaced piping socket welds. Piping welds will be examined in accordance with ASME B31.1 - 1992. Performance of this exam is required by both the original piping specification, Bechtel M-78, and the original code of construction, USAS B31.1- 1967. Additional NDE will be performed on the root welds for additional assurance of weld quality. B31.1 also requires that post modification testing include an initial service leak test at normal system operating pressure and temperature, which will be performed with the pump running. In addition, a functional test and verification of the flow through the replacement ROs will also be performed.

The proposed modification MR 99-029*D is scheduled to be installed during U2R25, and MR 99-029*C is scheduled to be installed during U1R27. These modifications will be installed while the unit is in Mode 4, 5 or 6, when the turbine driven AFW pumps 1P-29 and 2P-29 are not be required to be in service per LCO 3.7.5. Upon completion of each modification, the new installed RO will perform the same function as the existing orifices 1RO-4003 and 2RO-4003.

- I.2 Search the PBNP Current Licensing Basis (CLB) as follows: Final Safety Analysis Report (FSAR), FSAR Change Requests (FCRs) with assigned numbers, the Fire Protection Evaluation Report (FPER), the CLB (Regulatory) Commitment Database, the Technical Specifications (both Custom and Improved), the Technical Specifications Bases, and the Technical Requirements Manual. Search the ISFSI licensing basis as follows: VSC-24 Safety Analysis Report, the VSC-24 Certificate of Compliance, the CLB (Regulatory) Commitment Database, and the VSC-24 10 CFR 72.212 Site Evaluation Report. Describe the pertinent design function(s), performance requirements, and methods of evaluation for both the plant and for the cask/ISFSI as appropriate. Identify where the pertinent information is described in the above documents (by document section number and title). (Resource Manual 5.3.1 and NEI 96-07, App. B, B.2)

- *FPER, Auxiliary Feedwater System, Figure 6.6 - 4a.*
- *FSAR Section 1.3, General Design Criteria*
- *FSAR Section 10.1, Steam and Power Conversion System*
- *FSAR Section 10.2, Auxiliary Feedwater System*
- *FSAR Section 14.1.9, Loss of External Electric Load*
- *FSAR Section 14.1.10, Loss of Normal Feedwater*
- *FSAR Section 14.1.11, Loss of All AC Power to the Auxiliaries*
- *FSAR Section 14.2.4, Steam Generator Tube Rupture*
- *TS 3.7.5, AFW System*

The flow restricting orifices for the turbine driven auxiliary feedwater pumps (1/2RO-4003) have the following design functions, as described in FSAR Section 10.2.

- They serve to restrict the recirculation flow for the pumps to ensure adequate auxiliary feedwater flow to the steam generators in the event that the minimum flow recirculation control valve (1/2AF-4002) fails to close.
- They ensure adequate flow and pressure drop through the auxiliary feedwater pumps when they are operated in recirculation mode, thus preventing low flow instabilities and excessive fluid temperatures.
- They passively maintain the auxiliary feedwater system pressure boundary integrity.

- I.3 Does the proposed activity involve a change to any Custom or Improved Technical Specification (ITS)? Changes to Technical Specifications require a License Amendment Request (Resource Manual Section 5.3.1.2).

Technical Specification Change : ☐ Yes ☒ No

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If a Technical Specification change is required, explain what the change should be and why it is required.

- 1.4 Does the proposed activity involve a change to the terms, conditions or specifications incorporated in any VSC-24 cask Certificate of Compliance (CoC)? Changes to a VSC-24 cask Certificate of Compliance require a CoC amendment request.
- ☐ Yes ☒ No

If a storage cask Certificate of Compliance change is required, explain what the change should be and why it is required.

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PART II (50.59) - DETERMINE IF THE CHANGE INVOLVES A DESIGN FUNCTION (Resource Manual 5.3.2)

Compare the proposed activity to the relevant CLB descriptions, and answer the following questions:

YES	NO	QUESTION
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Does the proposed activity involve Safety Analyses or structures, systems and components (SSCs) credited in the Safety Analyses?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Does the proposed activity involve SSCs that support SSC(s) credited in the Safety Analyses?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Does the proposed activity involve SSCs whose failure could initiate a transient (e.g., reactor trip, loss of feedwater, etc.) or accident, <u>OR</u> whose failure could impact SSC(s) credited in the Safety Analyses?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Does the proposed activity involve CLB-described SSCs or procedural controls that perform functions that are required by, or otherwise necessary to comply with, regulations, license conditions, orders or technical specifications?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Does the activity involve a <i>method of evaluation</i> described in the FSAR?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Is the activity a <i>test or experiment</i> ? (i.e., a non-passive activity which gathers data)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Does the activity exceed or potentially affect a <i>design basis limit for a fission product barrier (DBLFPB)</i> ? (NOTE: If <u>THIS</u> question is answered <u>YES</u> , a 10 CFR 50.59 Evaluation is required.)

If the answers to ALL of these questions are NO, mark Part III as not applicable, document the 10 CFR 50.59 screening in the conclusion section (Part IV), then proceed directly to Part V - 10 CFR 72.48 Pre-screening Questions.

If any of the above questions are marked YES, identify below the specific design function(s), method of evaluation(s) or DBLFPB(s) involved.

The flow restricting orifices for the turbine driven auxiliary feedwater pumps (1/2RO-4003) have the following design functions that are affected by MR 99-029*C/*D:

- They serve to restrict the recirculation flow for the pumps to ensure adequate auxiliary feedwater flow to the steam generators in the event that the minimum flow recirculation control valve (1/2AF-4002) fails to close.
- They ensure adequate flow and pressure drop through the auxiliary feedwater pumps when they are operated in recirculation mode, thus preventing low flow instabilities and excessive fluid temperatures.
- They passively maintain the auxiliary feedwater system pressure boundary integrity.

PART III (50.59) - DETERMINE WHETHER THE ACTIVITY INVOLVES ADVERSE EFFECTS (Resource Manual 5.3.3)

If ALL the questions in Part II are answered NO, then Part III is ☐ NOT APPLICABLE.

Answer the following questions to determine if the activity has an *adverse effect* on a design function. Any YES answer means that a 10 CFR 50.59 Evaluation is required; EXCEPT where noted in Part III.3.

III.1 CHANGES TO THE FACILITY OR PROCEDURES

YES NO QUESTION

- | | | |
|--------------------------|-------------------------------------|--|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Does the activity adversely affect the <i>design function</i> of an SSC credited in safety analyses? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Does the activity adversely affect the method of performing or controlling the <i>design function</i> of an SSC credited in the safety analyses? |

If any answer is YES, a 10 CFR 50.59 Evaluation is required. If both answers are NO, describe the basis for the conclusion (attach additional discussion as necessary):

The replacement of flow restricting orifices 1/2RO-4003 by MR 99-029*C/*D will not adversely affect their design functions. Although the new orifices are of a different type, they will perform the same functions to allow flow to maintain TDAFP operability when in recirculation mode and to restrict flow if the recirculation control valve fails open. The method of performing these functions is slightly different, and the capability will be added to adjust the flow, but this will not adversely affect these design functions. The new orifices will provide essentially identical flow through the recirculation line, but with improved flow characteristics that will prevent cavitation. The orifice bodies are designed to ASME standards and have ratings that exceed that of the auxiliary feedwater piping. Non-destructive examination of the new welds and functional testing of the orifice will ensure that all design basis requirements are met.

These orifices are not explicitly required in an accident analysis to be able to pass service water, since the recirculation control valve would be closed when the pump is aligned to the steam generator. However, it is possible that when the pump is aligned to the service water system supply after the condensate storage tanks have been drained, service water could be pumped through the recirculation lines. To preclude the chance of clogging the orifice trim, the flow is directed from the outside of the stages inward. The holes in the outer stage are the smallest, and they get progressively larger in the inner stages. This causes the largest differential pressure to exist at the outer stages at locations with the smallest holes, which will reduce the potential for debris accumulation inside the orifice.

III.2 CHANGES TO A METHOD OF EVALUATION

(If the activity does not involve a method of evaluation, these questions are ☒ NOT APPLICABLE.)

YES NO QUESTION

- | | | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Does the activity use a revised or different method of evaluation for performing safety analyses than that described in the CLB? |
| <input type="checkbox"/> | <input type="checkbox"/> | Does the activity use a revised or different method of evaluation for evaluating SSCs credited in safety analyses than that described in the CLB? |

If any answer is YES, a 10 CFR 50.59 Evaluation is required. If both answers are NO, describe the basis for the conclusion (attach additional discussion, as necessary).

3 TESTS OR EXPERIMENTS

If the activity is not a test or experiment, the questions in III.3.a and III.3.b are ☒ NOT APPLICABLE.

a. Answer these two questions first:

YES	NO	QUESTION
<input type="checkbox"/>	<input type="checkbox"/>	Is the proposed test or experiment bounded by other tests or experiments that are described in the CLB?
<input type="checkbox"/>	<input type="checkbox"/>	Are the SSCs affected by the proposed test or experiment isolated from the facility?

If the answer to BOTH questions in V.3.a is NO, continue to III.3.b. If the answer to EITHER question is YES, then describe the basis.

b. Answer these additional questions ONLY for tests or experiments which do NOT meet the criteria given in III.3.a above. If the answer to either question in III.3.a is YES, then these three questions are ☐ NOT APPLICABLE.

YES	NO	QUESTION
<input type="checkbox"/>	<input type="checkbox"/>	Does the activity utilize or control an SSC in a manner that is outside the reference bounds of the design bases as described in the CLB?
<input type="checkbox"/>	<input type="checkbox"/>	Does the activity utilize or control an SSC in a manner that is inconsistent with the analyses or descriptions in the CLB?
<input type="checkbox"/>	<input type="checkbox"/>	Does the activity place the facility in a condition not previously evaluated or that could affect the capability of an SSC to perform its intended functions?

If any answer in III.3.b is YES, a 10 CFR 50.59 Evaluation is required. If the answers in III.3.b are ALL NO, describe the basis for the conclusion (attach additional discussion as necessary):

Part IV - 10 CFR 50.59 SCREENING CONCLUSION (Resource Manual 5.3.4).

Check all that apply:

A 10 CFR 50.59 Evaluation is ☐ required or ☒ NOT required.

A Point Beach FSAR change is ☐ required or ☒ NOT required. If an FSAR change is required, then initiate an FSAR Change Request (FCR) per NP 5.2.6.

A Regulatory Commitment (CLB Commitment Database) change is ☐ required or ☒ NOT required. If a Regulatory Commitment Change is required, initiate a commitment change per NP 5.1.7.

A Technical Specification Bases change is ☐ required or ☒ NOT required. If a change to the Technical Specification Bases is required, then initiate a Technical Specification Bases change per NP 5.2.15.

A Technical Requirements Manual change is ☐ required or ☒ NOT required. If a change to the Technical Requirements Manual is required, then initiate a Technical Requirements Manual change per NP 5.2.15.

II.3 TESTS OR EXPERIMENTS

If the activity is not a test or experiment, the questions in III.3.a and III.3.b are ☒ NOT APPLICABLE.

a. Answer these two questions first:

YES NO QUESTION

- | | | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Is the proposed test or experiment bounded by other tests or experiments that are described in the CLB? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are the SSCs affected by the proposed test or experiment isolated from the facility? |

If the answer to BOTH questions in V.3.a is NO, continue to III.3.b. If the answer to EITHER question is YES, then describe the basis.

b. Answer these additional questions ONLY for tests or experiments which do NOT meet the criteria given in III.3.a above. If the answer to either question in III.3.a is YES, then these three questions are ☐ NOT APPLICABLE.

YES NO QUESTION

- | | | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Does the activity utilize or control an SSC in a manner that is outside the reference bounds of the design bases as described in the CLB? |
| <input type="checkbox"/> | <input type="checkbox"/> | Does the activity utilize or control an SSC in a manner that is inconsistent with the analyses or descriptions in the CLB? |
| <input type="checkbox"/> | <input type="checkbox"/> | Does the activity place the facility in a condition not previously evaluated or that could affect the capability of an SSC to perform its intended functions? |

If any answer in III.3.b is YES, a 10 CFR 50.59 Evaluation is required. If the answers in III.3.b are ALL NO, describe the basis for the conclusion (attach additional discussion as necessary):

Part IV - 10 CFR 50.59 SCREENING CONCLUSION (Resource Manual 5.3.4).

Check all that apply:

A 10 CFR 50.59 Evaluation is ☐ required or ☒ NOT required.

A Point Beach FSAR change is ☐ required or ☒ NOT required. If an FSAR change is required, then initiate an FSAR Change Request (FCR) per NP 5.2.6.

A Regulatory Commitment (CLB Commitment Database) change is ☐ required or ☒ NOT required. If a Regulatory Commitment Change is required, initiate a commitment change per NP 5.1.7.

A Technical Specification Bases change is ☐ required or ☒ NOT required. If a change to the Technical Specification Bases is required, then initiate a Technical Specification Bases change per NP 5.2.15.

A Technical Requirements Manual change is ☐ required or ☒ NOT required. If a change to the Technical Requirements Manual is required, then initiate a Technical Requirements Manual change per NP 5.2.15.

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10 CFR 72.48 SCREENING

NOTE: NEI 96-07, Appendix B, Guidelines for 10 CFR 72.48 Implementation should be used for guidance to determine the proper responses for 72.48 screenings.

PART V (72.48) - 10 CFR 72.48 INITIAL SCREENING QUESTIONS

Part V determines if a full 10 CFR 72.48 screening is required to be completed (Parts VI and VII) for the proposed activity.

YES NO QUESTION

- | | | |
|--------------------------|-------------------------------------|--|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Does the proposed activity involve <u>IN ANY MANNER</u> the dry fuel storage cask(s), the cask transfer/transport equipment, any ISFSI facility SSC(s), or any ISFSI facility monitoring as follows: Multi-Assembly Sealed Basket (MSB), MSB Transfer Cask (MTC), MTC Lifting Yoke, Ventilated Concrete Cask (VCC), Ventilated Storage Cask (VSC), VSC Transporter (VCST), ISFSI Storage Pad Facility, ISFSI Storage Pad Data/Communication Links, or PPCS/ISFSI Continuous Temperature Monitoring System? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Does the proposed activity involve <u>IN ANY MANNER</u> SSC(s) installed in the plant specifically added to support cask loading/unloading activities, as follows: Cask Dewatering System (CDW), Cask Reflood System (CRF), or Hydrogen Monitoring System? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Does the proposed activity involve <u>IN ANY MANNER</u> SSC(s) needed for plant operation which are also used to support cask loading/unloading activities, as follows: Spent Fuel Pool (SFP), SFP Cooling and Filtration (SF), Primary Auxiliary Building Ventilation System (VNPAB), Drumming Area Ventilation System (VNDRM), RE-105 (SFP Low Range Monitor), RE-135 (SFP High Range Monitor), RE-221 (Drumming Area Vent Gas Monitor), RE-325 (Drumming Area Exhaust Low-Range Gas Monitor), PAB Crane, SFP Platform Bridge, Truck Access Area, or Decon Area? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Does the proposed activity involve a change to <u>Point Beach CLB</u> design criteria for external events such as earthquakes, tornadoes, high winds, flooding, etc.? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Does the activity involve plant heavy load requirements or procedures for areas of the plant used to support cask loading/unloading activities? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Does the activity involve any potential for fire or explosion where casks are loaded, unloaded, transported or stored? |

If ANY of the Part V questions are answered YES, then a full 10 CFR 72.48 screening is required and answers to the questions in Part VI and Part VII are to be provided. If ALL the questions in Part V are answered NO, then check Parts VI and VII as not applicable. Complete Part VIII to document the conclusion that no 10 CFR 72.48 evaluation is required.

PART VI (72.48) - DETERMINE IF THE CHANGE INVOLVES A ISFSI LICENSING BASIS *DESIGN FUNCTION*

(If ALL the questions in Part V are NO, then Part VI is ☒ NOT APPLICABLE.)

Compare the proposed activity to the relevant portions of the ISFSI licensing basis and answer the following questions:

YES NO QUESTION

- | | | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Does the proposed activity involve cask/ISFSI Safety Analyses or plant/cask/ISFSI structures, systems and components (SSCs) credited in the Safety Analyses? |
| <input type="checkbox"/> | <input type="checkbox"/> | Does the proposed activity involve plant, cask or ISFSI SSCs that support SSC(s) credited in the Safety Analyses? |
| <input type="checkbox"/> | <input type="checkbox"/> | Does the proposed activity involve plant, cask or ISFSI SSCs whose function is relied upon for prevention of a radioactive release, <u>OR</u> whose failure could impact SSC(s) credited in the Safety Analyses? |
| <input type="checkbox"/> | <input type="checkbox"/> | Does the proposed activity involve cask/ISFSI described SSCs or procedural controls that perform functions that are required by, or otherwise necessary to comply with, regulations, license conditions, CoC conditions, or orders? |
| <input type="checkbox"/> | <input type="checkbox"/> | Does the activity involve a <i>method of evaluation</i> described in the ISFSI licensing basis? |
| <input type="checkbox"/> | <input type="checkbox"/> | Is the activity a <i>test or experiment</i> ? (i.e., a non-passive activity which gathers data) |

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☐ Does the activity exceed or potentially affect a cask *design basis limit for a fission product barrier (DBLFPB)*?
(NOTE: If THIS question is answered YES, a 10 CFR 72.48 Evaluation is required.)

If the answers to ALL of these questions are NO, mark Parts VII as not applicable, and document the 10 CFR 72.48 screening in the conclusion section (Part VIII).

If any of the above questions are marked YES, identify below the specific design function(s), method of evaluation(s) or DBLFPB(s) involved.

PART VII (72.48) - DETERMINE WHETHER THE ACTIVITY INVOLVES ADVERSE EFFECTS (NEI 96-07, Appendix B, Section B.4.2.1)

(If ALL the questions in Part V or Part VI are answered NO, then Part VII is ☒ NOT APPLICABLE.)

Answer the following questions to determine if the activity has an *adverse effect* on a design function. Any YES answer means that a 10 CFR 72.48 Evaluation is required; EXCEPT where noted in Part VII.3.

VII.1 Changes to the Facility or Procedures

YES NO QUESTION

☐ ☐ Does the activity adversely affect the *design function* of a plant, cask, or ISFSI SSC credited in safety analyses?

☐ ☐ Does the activity adversely affect the method of performing or controlling the *design function* of a plant, cask, or ISFSI SSC credited in the safety analyses?

If any answer is YES, a 10 CFR 72.48 Evaluation is required. If both answers are NO, describe the basis for the conclusion (attach additional discussion, as necessary):

VII.2 Changes to a Method of Evaluation

(If the activity does not involve a method of evaluation, these questions are ☐ NOT APPLICABLE.)

YES NO QUESTION

☐ ☐ Does the activity use a revised or different method of evaluation for performing safety analyses than that described in a cask SAR?

☐ ☐ Does the activity use a revised or different method of evaluation for evaluating SSCs credited in safety analyses than that described in a cask SAR?

If any answer is YES, a 10 CFR 72.48 Evaluation is required. If both answers are NO, describe the basis for the conclusion (attach additional discussion, as necessary):

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VII.3 Tests or Experiments

(If the activity is not a test or experiment, the questions in VII.3.a and VII.3.b are ☐ NOT APPLICABLE.)

a. Answer these two questions first:

YES NO QUESTION

☐ ☐ Is the proposed test or experiment bounded by other tests or experiments that are described in the cask ISFSI licensing basis?

☐ ☐ Are the SSCs affected by the proposed test or experiment isolated from the cask(s) or ISFSI facility?

If the answer to both questions is NO, continue to VII.3.b. If the answer to EITHER question is YES, then briefly describe the basis.

b. Answer these additional questions ONLY for tests or experiments which do not meet the criteria given in VII.3.a above. If the answer to either question in VII.3.a is YES, then these three questions are ☐ NOT APPLICABLE:

YES NO QUESTION

☐ ☐ Does the activity utilize or control an SSC in a manner that is outside the reference bounds of the design bases as described in the ISFSI licensing basis?

☐ ☐ Does the activity utilize or control a plant, cask or ISFSI facility SSC in a manner that is inconsistent with the analyses or descriptions in the ISFSI licensing basis?

☐ ☐ Does the activity place the cask or ISFSI facility in a condition not previously evaluated or that could affect the capability of a plant, cask, or ISFSI SSC to perform its intended functions?

If any answer in VII.3.b is YES, a 10 CFR 72.48 Evaluation is required. If the answers are all NO, describe the basis for the conclusion (attach additional discussion as necessary):

PART VIII - DOCUMENT THE CONCLUSION OF THE 10 CFR 72.48 SCREENING

Check all that apply:

A 10 CFR 72.48 Evaluation is ☐ required or ☐ NOT required. Obtain a screening number and provide the original to Records Management regardless of the conclusion of the 50.59 or 72.48 screening.

A VSC-24 cask Safety Analysis Report change is ☐ required or ☐ NOT required. If a VSC-24 cask SAR change is required, then contact the Point Beach Dry Fuel Storage group supervisor.

A Regulatory Commitment (CLB Commitment Database) change is ☐ required or ☐ NOT required. If a Regulatory Commitment Change is required, initiate a commitment change per NP 5.1.7.

A change to the VSC-24 10 CFR 72.212 Site Evaluation Report is ☐ required or ☐ NOT required. If a VSC-24 10 CFR 72.212 Site Evaluation Report change is required, then contact the Point Beach Dry Fuel Storage group supervisor.

NUCLEAR POWER BUSINESS UNIT
DESIGN VERIFICATION NOTICE

Title of Document AUX FEED WATER PUMP 2P-29 MINIMUM FLOW RECIRC LINE ORIFICE

Document No. MR 99-029*D

Rev. 0

Date 12/04/2001

Design Verification Method: ☒ Design Review

☐ Alternate Calcs

☐ Qualification Testing

UPDATES TO THIS FORM COVERED BY EXISTING SCR 97-410

REVIEWER CHECKLIST CONSIDERATIONS:

	Yes	No	N/A
1. Were the inputs correctly selected and incorporated into design?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are assumptions necessary to perform the design activity adequately described and reasonable? Where necessary, are the assumptions identified for subsequent reverifications when the detailed design activities are completed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Are the appropriate quality and quality assurance requirements specified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are the applicable codes, standards, and regulatory requirements including issue and addends properly identified and are their requirements for design met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Have applicable construction and operating experience been considered?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Have the design interface requirements been satisfied?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Was an appropriate design method used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Is the output reasonable compared to inputs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Are the specified parts, equipment and processes suitable for the required application?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Are the specified materials compatible with each other and the design environmental conditions to which the material will be exposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Have adequate maintenance features and requirements been specified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12. Are accessibility and other design provisions adequate for performance of needed maintenance and repair?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Has adequate accessibility been provided to perform the in-service inspection expected to be required during the plant life?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Has the design properly considered radiation exposure to the public and plant personnel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are the acceptance criteria incorporated in the design documents sufficient to allow verification that design requirements have been satisfactorily accomplished?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Have adequate pre-operational (IST, PMT, ISI, snubber, etc.), subsequent periodic test, and inspection requirements been appropriately specified, including acceptance criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Are adequate handling, storage, cleaning, and shipping requirements specified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
18. Are adequate identification requirements specified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Are requirements for records adequately specified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Will the change remain within the analyzed or specified capabilities of any affected equipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Has a field inspection been done?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Have impacts on other systems been identified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS: ☒ None

☐ Attached (Use Form PBF-1633)

Design Prepared By: Alex Foltynowicz REC for AF per email

Date 12-4-01

Reviewed By: Rob Chapman [Signature]

Date 12-4-01

Approval By: [Signature]

Date 12-4-01

Point Beach Nuclear Plant
DESIGN INPUT CHECKLIST

Modification or Temporary Modification Number: 99-029*D

Title: AUX. FEED WATER PUMP 2P-29 MINIMUM FLOW RECIRC. LINE ORIFICE.

INSTRUCTIONS: Consider the basic functions of each structure, system, and component, (SSC), when answering the questions. The designer shall check the appropriate box for each design input or section. All inputs that apply to the design shall be explained. The explanation may be documented on this checklist or in the design summary. The reviewer shall review the checklist, and any differences between the designer and the reviewer should be addressed. This checklist addresses most design concerns, but is not all encompassing. Any additional concerns should be addressed in the design summary.

(Updates to this form covered by SCR 97-411.)

APPLIES TO DESIGN

YES

NO

A. General codes, standards, regulatory requirements, and design criteria.

1. Are any of the PBNP FSAR general design criteria applicable? (Reference FSAR, Section 1.3. Identify and address design criteria as appropriate.) ☒ ☐

2. Are any design requirements contained in commitments affected? (Reference CLB database and the Safety Evaluation/Screening associated with this change.) ☒ ☐
See 50.59 Screening SCR 2001-0981

3. Meet State of Wisconsin Administrative Code requirements? (Refer to ILHR 41.42, PSC 114, and other sections as appropriate for requirements.) ☐ ☒

4. Meet existing DNR permits or require DNR approval? (Contact WE Environmental Department.) ☐ ☒

5. Consider the effect of design and accident conditions, such as pressure, temperature, fluid chemistry, and radiation on components, including internal elastomers and material coating compatibility. ☒ ☐
(Changes in design parameters may impact Environmental Qualification.)

6. Incorporate new types/models of equipment not presently used at PBNP? ☐ ☒

7. Affect accessibility of any equipment? Consider interim conditions, future maintenance, and in-service inspection. (Reference CIMs and drawings for manufacturer's clearance requirements.) ☐ ☒

8. Require breaching a High Energy Line Break (HELB) barrier? (Reference NP 8.4.16) If yes, EQ engineer review required. ☐ ☒

9. Consider operating experience from PBNP and industry events. (Reference DG-G04 for operating experience reviews and NPRDS, NODIL, CHAMPS, INPO Keywords, or other databases.) ☒ ☐

DESIGN INPUT CHECKLIST

APPLIES TO DESIGN

YES

NO

10. Consider failure effects on structures, systems, and components: (Failure analysis is only required for maintenance rule systems. Contact the NSA-PSA group for guidance and scope.)

- a. The design discusses those events/accidents which the system/components are to withstand? ☐ YES ☒ NO
- b. The failure effect of the system/components: (Reference the NSA-PSA Group, Operating Experience, & IEEE-352-1975.) ☐ YES ☐ NO
 - How components may fail, and the effect of the failure on the system and related systems?
 - What mechanisms might produce failures?
 - How a failure would be detected?
 - What provisions are included to compensate for the failure?

11. Does the design add or remove components in containment? ☒ YES ☐ NO

- a. Change the amount of exposed aluminum in containment? (Reference DG-G07 and FSAR Section 5.6.) ☐ YES ☐ NO
- b. Change the amount of exposed zinc in containment? (Reference DG-G07.) ☐ YES ☐ NO
- c. Introduce materials into containment that could affect sump performance or lead to equipment degradation? (Reference DG-G07.) ☐ YES ☐ NO
- d. Decrease free volume of containment? ☐ YES ☐ NO
- e. Require addition or modification of a containment penetration boundary? (Consult the containment system engineer.) ☐ YES ☐ NO
- f. Require painting in containment? (Reference MI 36.3.) ☐ YES ☐ NO

12. Consider potential for fuel failure? ☒ YES ☐ NO

- a. Affect fuel handling equipment? ☐ YES ☐ NO
- b. Present the potential for introducing foreign material/debris into the RCS or connected systems? ☐ YES ☐ NO
- c. Affect core barrel flow patterns? ("Baffle jetting" concerns) ☐ YES ☐ NO

DESIGN INPUT CHECKLIST

APPLIES TO DESIGN

YES

NO

Mechanical requirements. (Contact Mechanical Design Engineering for guidance.)

1. Have applicable ASME Boiler & Pressure Vessel codes or other standards been identified? (Reference the applicable specification. In addition, safety-related components should be reconciled with DG-M16, and QA components should be reconciled with ANSI N45.2.) ☒ ☐
2. Affect or add components/systems to ASME Section XI class 1, 2, or 3 equipment? (Reference PBNP CHAMPS, CBD drawings, and IST Coordinator. If YES, follow NP 7.2.5, Repair/Replacement Program.) ☐ ☒
3. Require State of Wisconsin Administrative Code permits/approvals? (Reference NP 7.4.9; Wisconsin Administrative Code for Boilers and Pressure Vessels or the Authorized Inspector.) ☐ ☒
4. Consider component performance requirements such as capacity, rating, output? ☒ ☐
5. Consider hydraulic requirements such as pump net positive suction heads, allowable pressure drops, allowable fluid velocities and pressures, valve trim requirements, packing/seal requirements? ☒ ☐
6. Provide vents, drains, and sample points to accommodate operational, maintenance and testing needs? ☐ ☒
7. Require service water? (Both essential and nonessential service water loads are modeled, and load changes must be evaluated. Contact the SWAP Coordinator.) ☐ ☒
8. Require the addition of check valves? (Reference DG-M13 for selection guidance.) ☐ ☒
9. Require and evaluate any additional loading on instrument or service air, circ, fire protection, or demineralized water, or other system? ☐ ☒
10. Evaluate any additional loading on HVAC systems or affect ventilation flow during or after installation? (This will require an EQ review for potential updates to EQSS, EQML & EQMR.) ☐ ☒
11. Affect ventilation barriers, including containment, primary auxiliary building, or control room? ☐ ☒
12. Require insulation? (Reference WE specification PB-485 for insulation, and NP 1.9.10 for asbestos control.) ☐ ☒
13. Require lubrication? (Reference Lubrication Manual.) ☐ ☒

DESIGN INPUT CHECKLIST

APPLIES TO DESIGN

	<u>YES</u>	<u>NO</u>
14. Require an independent means of pressure relief? (Reference B31.1.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15. Affect the assigned system design pressure or temperature?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
16. Involve cobalt-laden materials into the RCS or into systems that supply the RCS? (Reference NP 4.2.29, "Source Term Reduction Program.")	<input type="checkbox"/>	<input checked="" type="checkbox"/>
17. Are new materials and their coatings/plating compatible with system chemistry and disposal systems (NP 8.4.15)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
18. Affect embedded or buried piping?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
C. Electrical requirements. (Contact Electrical Design Engineering for guidance.)		
1. Consider design conditions such as ampacity, voltage drop?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Consider component and system performance requirements, such as current, voltage, or power?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Consider redundancy, diversity and separation requirements of structures, systems and components? (Reference DG-E07 for separation of electrical circuits.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Comply with protective relaying requirements of equipment and systems?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Selection of overcurrent devices for proper protection and coordination? (Reference DG-E04 for selection of molded case circuit breakers.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Affect available fault current at any bus?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Assure that all added cables meet fire retardancy requirements? (Reference FPER Section 4.1.8, IEEE 383.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Be compatible with existing electrical insulation and wiring?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Affect ampacity of existing cables?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. Maintain UL (or equivalent) listings?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DESIGN INPUT CHECKLIST

APPLIES TO DESIGN

YES

NO

11. Alter the voltage harmonic distortion content or change the non-linear loading (i.e., the addition of switching power supplies, the alteration of the circuit's power factor, etc.) on a vital or sensitive instrument bus?

☐
☒

12. Add new raceways? (Reference DG-E03 for electrical raceway sizing and DG-E02.)

☐
☒

13. Add cables to existing electrical raceways?

☐
☒

14. Be routed through fire wrapped raceways?

☐
☒

15. Affect the station grounding or lightning protection system?

☐
☒

16. Make any vital circuit susceptible to ground?

☐
☒

17. Affect emergency diesel loading? (Reference DG-E06 for diesel load change evaluation.)

☐
☒

18. Add more station battery loading?

☐
☒

19. Add load to a vital bus?

☐
☒

20. Add load to a non-vital bus?

☐
☒

21. Be compatible with service transformer capacity?

☐
☒

22. Consider electromagnetic interference between new/existing equipment and electromagnetic coupling interactions between circuits?

☐
☒

23. Affect embedded conduits or buried cables, including the station grounding system?

☐
☒

DESIGN INPUT CHECKLIST

APPLIES TO DESIGN

YES

NO

Instrumentation and control requirements. (Contact I&C Design Engineering for guidance.)

- | | | |
|---|--------------------------|-------------------------------------|
| 1. Consider design conditions such as pressure, temperature, fluid chemistry, amperage, voltage? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Have the instruments been properly selected for the application? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Have sufficient instruments for operators to monitor the process? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. Have appropriate instrument scales? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Have the instruments, control switches, and indicating devices been appropriately located for human factors (both for operations and maintenance)? (Reference DG-G01.) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. Have alarms for off-normal conditions? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7. Be capable of or require remote and/or local operation? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 8. Be capable of or require manual and/or automatic operation? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9. Require calibration and maintenance requirements for the instruments to be specified? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 10. Have specified the instruments with proper range and accuracy? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 11. Address solid state vulnerability to RFI? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 12. Consider software and programming/programmable settings of digital or electronic equipment? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 13. Affect logic circuits or associated GL 96-01 review/required testing? Contact I&C System Engineering group. | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

DESIGN INPUT CHECKLIST

APPLIES TO DESIGN

YES

NO

Structural requirements. (Contact Civil Design Engineering for guidance.)

- | | | |
|--|-------------------------------------|-------------------------------------|
| 1. Affect or scope seismically qualified equipment (Class 1 or 2) and therefore require a seismic qualification evaluation? (Reference NP 7.7.2, "Seismic Qualification of Equipment.") | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Affect seismic boundaries? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Affect stress calculations of pipe? (Reference DG-M09.) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Affect the loading or require changes to existing equipment foundations? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Affect wall stress calculations for pressurized concrete cubicles or structures? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. Require analysis of non-seismic components placed over or adjacent to seismic components? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7. Add items which span between two separate seismic areas/buildings? (The effect of the relative movement must be addressed.) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 8. Require clearance review for seismic movement or thermal expansion considerations? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 9. Require a floor or wall loading analysis? (Reference Bechtel C-dwgs.) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 10. Require the addition of new supports, hangers, or foundations or add weight to or between existing supports, hangers, embeds, or foundations during installation or post-installation? (Reference DG-M09 and DG-M10 for pipe support.) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 11. Add new or add load to seismically qualified raceways? (Reference NP 7.7.2, "Seismic Qualification of Equipment.") | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 12. Modify, attach to, or locate within the proximity of masonry block walls? (Reference IEB 80-11 Block Wall Program.) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 13. Require core drills, expansion anchors, or re-bar cuts? (Reference DG-C01 for expansion anchor design and installation.) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 14. Create an external or internal missile hazard? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 15. Consider wind and storm loading on external structures? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

DESIGN INPUT CHECKLIST

APPLIES TO DESIGN

YES

NO

16. Require protection from high energy line break jet? (Refer to FSAR Appendix A.2.)

☐
☒

17. Consider dynamic requirements such as live loading, vibration, and shock/impact?

☐
☒

F. Programs

1. ASME Section XI and QA considerations:

a. Affect IST acceptance criteria or calculations? (Contact Component Engineering.)

☐
☒

b. Require classification of new components? (Reference DG-G06 for system, component, and part classification.)

☐
☒

c. Affect QA-scope systems or boundaries? (Contact Site Programs Engineering Support for Q-List.)

☒
☐

d. Require special personnel/equipment qualifications not proceduralized at PBNP (i.e., underwater welding)?

☐
☒

e. Require material certification or other certification to ensure quality equal to or better than the affected SSC? (These requirements need to be specified in the specification or purchase requisition.)

☒
☐

f. Have all design requirements, such as pressure or current rating, been reviewed against lot descriptions or been specified on purchase requisitions/specifications?

☒
☐

2. Fire protection considerations:

a. Affect access to a fire zone, fire protection equipment or Appendix R safe shutdown equipment, including manual fire fighting activities? (Reference Section 5.2.1 of Design Guide DG-F01)

☐
☒

b. Affect a fire barrier? (Reference NP 8.4.11 and Fire Barrier Drawings WE PBC-218 Sheets 1-20, Section 5.2.2 of Design Guide DG-F01)

☐
☒

c. Affect a fire protection system or its performance? (Reference Section 5.2.3 of Design Guide DG-F01)

☐
☒

d. Increase or decrease permanent combustible loading in a room? (Reference Section 5.2.4 of Design Guide DG-F01)

☐
☒

DESIGN INPUT CHECKLIST

APPLIES TO DESIGN

YES

NO

- | | | | |
|----|--|--------------------------|-------------------------------------|
| e. | Based on Section 2 and Appendix A of the SSAR, will the change add to, delete from, or affect the performance of safe shutdown systems or equipment? (Reference Section 5.2.5.1 of Design Guide DG-F01) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f. | Based on Sections 3, 4, and Appendix C of the SSAR, will the change affect a cable associated with safe shutdown equipment, a safe shutdown power supply, or the physical location of a safe shutdown cable? (Reference Section 5.2.5.2 of Design Guide DG-F01) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| g. | Based on Table 1-1, Section 5 and Appendix D of the SSAR, will the change affect fire area analysis and compliance with Appendix R separation criteria or the conditions of an approved Appendix R exemption for any PBNP Fire Area? (Reference Section 5.2.5.3 of Design Guide DG-F01, Table 3.2-2 of DBD T-40) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| h. | Will the change add, remove, or affect the performance of any emergency lighting required for compliance with Section III.J of Appendix R? (Reference Section 5.2.6 of Design Guide DG-F01) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| i. | Will the change add, remove, or affect the performance of any plant communications system relied upon for fire fighting or safe plant shutdown? (Reference Section 5.2.7 of Design Guide DG-F01) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| j. | Will the change affect the Reactor Coolant Pump Oil Collection System? (Reference Section 5.2.8 of Design Guide DG-F01) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| k. | Will the change affect the Fire Protection Manual? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| l. | Will the change affect any of the Supporting Documents listed in the SSAR (Section 6.0) or the FHAR (Section 4.0)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

If any of the questions a through j are answered "yes", an evaluation must be performed using the applicable sections of the FPCC checklist, PBF-2060 per Section 5 of Design Guide DG-F01.

3. Flooding protection considerations:

A flooding analysis should be performed if any of the following questions are applicable and answered yes. (Reference Section 4.3 of DG-C02.)

- | | | | |
|----|--|--------------------------|-------------------------------------|
| a. | Modify potential flooding sources or add new potential flooding sources to a flood zone and thereby increase the direct and/or indirect flooding vulnerability of essential equipment? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b. | Degrade existing flood barriers or flood mitigation features providing unanalyzed pathway for flooding to propagate? (Reference Section 3.2 of DG-C02.) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

DESIGN INPUT CHECKLIST

APPLIES TO DESIGN

YES

NO

- | | | | |
|---|--|-------------------------------------|-------------------------------------|
| c. | Involve the opening of potential flood sources anywhere at the station? (Installation procedures need to address inadvertent flooding. Reference DG-C02, Section 4.4.) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d. | Reduce the capacity to isolate or cope with flooding? (Reference Sect. 4.2 of DG-C02.) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e. | Change plant drainage/backfill requirements? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f. | Locate essential equipment or supporting systems where it would be susceptible to flooding? (Flooding conditions may also impact Environmental Qualification.) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. Environmental considerations: | | | |
| a. | Be subject to adverse environmental conditions during storage or construction? (Reference NP 9.5.2.) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b. | Require freeze protection or affect existing freeze protection? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c. | Locate safety-related or post accident monitoring equipment in a HARSH environment? (Reference NP 7.7.1.) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d. | Require Environmental Qualification (EQ)? (Reference NP 7.7.1 for EQ qualification.) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e. | Be attached to an EQ system/component? (This will require an EQ review for potential updates to EQSS, EQML & EQMR. Reference EQ master list.) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f. | Change environmental parameters (e.g., pressure, temperature, radiation, humidity)? (Reference NP 7.7.1, "Environmental Qualification of Electrical Equipment.") | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Radiation Protection (RP) and ALARA considerations: (Reference DG-G03, "ALARA Consideration Guideline for Design & Installation.") | | | |
| The areas mentioned below are normally within the RCA, but radiological concerns should be considered for SSC outside the RCA also. | | | |
| a. | Affect any SSC in an RWP required area, a contaminated area, or a radiation area, including opening of a system that may be a radiological concern? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b. | Will the change generate excessive radwaste or highly radioactive/contaminated waste? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c. | Remove any plant equipment from a potentially contaminated system (including BOP systems)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

DESIGN INPUT CHECKLIST

APPLIES TO DESIGN

YES

NO

- | | | |
|--|--------------------------|-------------------------------------|
| <p>d. Result in an anticipated increase in operational or maintenance exposures? (Consider equipment rearrangement to reduce plant life dose?)</p> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <p>e. Result in an expected exposure of greater than 1 Rem for any individual during installation of the change?</p> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <p>f. Result in an anticipated collective exposure of greater than 2 Rem for the installation of the change?</p> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

If questions d, e, or f apply and are answered yes, then an ALARA review shall be performed. (Reference NP 4.2.3, "ALARA Review Procedure.")

6. Chemistry considerations:

- | | | |
|--|--------------------------|-------------------------------------|
| <p>a. Require or affect established chemistry limits? (Contact system engineer and review chemistry procedures.)</p> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <p>b. Require any routine chemical analyses? (Contact system engineer and review chemistry procedures.)</p> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <p>c. Require chemical additives? (Contact PBNP Chemistry.)</p> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <p>d. Do new fluids/chemicals need to be evaluated for TRI (Toxic Release Inventory), CHES, critical applications, or special disposal requirements? (Contact Chemistry/Chemical Engineering.)</p> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

G. Installations

- | | | |
|--|-------------------------------------|-------------------------------------|
| <p>1. Installation requirements/plant conditions have been determined?</p> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <p>2. Consider test and inspection requirements, including the conditions under which they will be performed? (Reference NP 7.4.1 for pressure test requirements, NP 7.4.3 for post-maintenance and modification NDE requirements, NP 1.2.5 for special test procedures, and OM 4.2.2 for in-service tests.)</p> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <p>3. Have post-installation acceptance criteria been properly specified to test the intended function of the component(s)/system?</p> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <p>4. Comply with all WE lifting and rigging requirements? (Reference WE Safety Manual, PBNP Safe Load Path procedures, and NP 8.4.7.)</p> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <p>5. Consider ALARA for installation activities? (i.e., shielding, monitoring water level, etc.)</p> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

DESIGN INPUT CHECKLIST

APPLIES TO DESIGN

	<u>YES</u>	<u>NO</u>
6. Require special handling, shipping, or environmental conditions for storage or construction? (Reference NP 9.5.2 for material storage.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Consider transportability requirements such as size and shipping weight limitations.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Require spare parts or special non-standard items or tools?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Will any added components introduce chemical contaminants to the system? (i.e., preservative coating on valves, coatings on weld rod can also introduce contaminants)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. Consider personnel requirements and limitations, including the qualification and number of personnel available for plant operation, maintenance, testing and inspection, and permissible personnel radiation exposures?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Operational requirements under various conditions, such as plant startup, normal plant shutdown, plant emergency operation, special or infrequent operation, and system abnormal or emergency operation.		
a. Require new procedures or procedure changes? (Reference NP 1.2.5.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Potentially impact other systems, components, or structures during installation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Present installation impacts on plant operations (i.e., fire watches, etc.)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. Access and administrative requirements for plant security: If any security requirements are applicable, notify Security.		
a. Create an opening >96 in. ² in any wall, ceiling, or other barrier?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Require work within 20' of fence?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Affect security equipment and documents, including those containing safeguards information? (Contact Security for design development requirements and design concurrence.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Affect access controls?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13. Safety requirements:		
a. Affect safety equipment and thereby create personnel hazards (i.e., removal of handrails)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Introduce hazardous material into the plant? (Reference NP 1.9.1.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DESIGN INPUT CHECKLIST

APPLIES TO DESIGN

YES

NO

- c. Affect evacuation routes or escape provisions from enclosures? ☐ ☒
- d. Meet OSHA regulations? (Reference Wisc. Electric Safety Manual and OSHA 29 CFR 1910.) ☒ ☐
- e. Move any energy sources? If yes, verify installation document covers move, including transferring danger tags. ☐ ☒

Designed by: Alex Foltynowicz RCC for AF per email

Date: 12-4-01

Reviewed by: Rob Chapman [Signature]

Date: 12-4-01

IWP NUMBER: 99-029*D

Page 1 of 22

INSTALLATION WORK PLAN

PBNP MINOR PROCEDURE

☐

Check As
Applicable

WORK ORDER WORK PLAN

☒

FOR MODIFICATION # MR 99-029*D, WO # 9944189

INSTALLATION WORK PLAN TITLE

AUX FEED WATER PUMP 2P-29 MINIMUM FLOW RECIRC LINE ORIFICE

UNIT 2 ☒ QA-SCOPE ☐ NON QA-SCOPE

Originator Alex Fetyushin ^{RCC for AP} _{per email} Date 12-4-01

Reviewer Reto Chazotte ^{MR of} Date 12-4-01

Final Design
Group Head [Signature] Date 12-5-01

Quality Engineer [Signature] Date 12/4/01

Installation
Group Head [Signature] Date 12-4-01

Manager -
Operations or DSS [Signature] Date 12-4-01

QC REVIEW:
Alan Frank 1/15/02

NOTE: Changes to this work plan must be done with the concurrence of the responsible or team engineer and the installation supervisor, or as delineated within the IWP.

DG-G02.5
Revision 1

BEST COPY AVAILABLE

AUX FEED WATER PUMP 2P-29 MINIMUM FLOW
RECIRC LINE ORIFICE
UNIT 2

December 4, 2001

1.0 SCOPE

- 1.1 The scope of this installation work plan is to replace a portion of the existing AF line 2"-DB-3, including pressure reducing orifice (2RO-04003). The replaced piping and new RO will be welded back utilizing oversized socket welds.
- 1.2 The purpose of this modification is to reduce piping line noise and vibration when operating Auxiliary Feedwater (AF) pump 2P-29 in the recirculation mode. The presently installed RO is cavitating, causing excessive noise and pipe vibration. The purpose for oversized socket welds is to offer a significant high cycle fatigue improvement over standard ASME Code socket welds.
- 1.3 The approach of this installation is as follows:
 - 1.3.1 Pre-fabricate new section of pipe as shown on sketch SK-MR-99-029*D (pre-fab work done under WO 9950215).
 - 1.3.2 Isolate and drain the affected piping.
 - 1.3.3 Remove portion of the existing AF line 2"-DB-3.
 - 1.3.4 Install new sections of AF line 2"-DB-3.
 - 1.3.5 Perform VT and PT exams on all new welds.
 - 1.3.6 Functionally test the mini-recirc. line to verify operability.
 - 1.3.7 Perform inservice leak check of new/modified piping and welds.
- 1.4 This installation is scoped as QA, safety-related work.

QA Scope Clarification:

The piping downstream of 2RO-4003 is QA, non safety-related (AQ) scope.
- 1.5 Installation of this IWP will be performed while Unit 2 is in Mode 4, 5, or 6. The 2P-29 auxiliary feedwater pump will be out of service.
- 1.6 This modification will not affect any ASME Section XI pressure boundaries. An R/R/M is not required.

1.7 Support Requirements

- 1.7.1 Operations: Support to install and remove danger tags, system draining, and post maintenance and operability testing.
- 1.7.2 NDE Group: Perform visual/penetrant (VT/PT) examinations and pipe thickness measurements where specified in this IWP.
- 1.7.3 Security: Performs fire watch duties as directed by Operations.
- 1.7.4 QC: Perform inspections as required.
- 1.7.5 Engineering: Support NDE evaluations and post maintenance testing.

RE: Rob Chapman x7636 pager 0114 Home Tel. 920-429-9146
- 1.7.6 Mechanical Maintenance: Perform removal and installation of orifice, piping, and supports.

2.0 PRE-INSTALLATION REQUIREMENTS

2.1 References:

- 2.1.1 Working drawing:
 - a. SK-MR-99-029*D, "Auxiliary Feedwater System Orifice 2RO – 4003 Replacement, Units 1 & 2."
- 2.1.2 Vendor/Contractor drawing:
 - a. Flowserve drawing 94-16249
- 2.1.3 Applicable Codes and Standards:
 - a. USAS B31.1 – 1967
 - b. ASME B31.1 – 1992
- 2.1.4 Supplemental Procedures:
 - a. MI 32.1 Flange and Closure Bolting
 - b. MI 32.8 Guidelines for Opening Piping Systems

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- c. MI 32.11 Installation and Reuse of Swagelok Fittings
- d. NP 1.9.6 Plant Cleanliness, Storage, and Inspection Program
- e. NP 1.9.9 Transient Combustible Control
- f. NP 1.9.13 Ignition Control Procedure
- g. NP 1.9.15 Danger Tag Procedure
- h. NP 8.4.10 Exclusion of Foreign Material from Plant Components and Systems
- i. NP 8.5.2 CHAMPS Equipment Database Usage and Control
- j. OI 62B Turbine-Driven Auxiliary Feedwater System (2P-29)
- k. PBF-9142 Bolting-Torque And Loading
- l. WP-7 Welding Procedure for Stainless Steels Group P-8 GTAW-Pipe Diameters Over 1" OD
- m. WP-8 Carbon Steels ASME Group P-1 to Austenitic Stainless Steel ASME Group P-8 GTAW Pipe Diameters Over 1" OD

Responsible Engineer has assured that all references listed above are approved and the applicable requirements have been incorporated into the IWP. The references are either with the Installation Group, attached, or are readily available to the Installation Group.

RE  Date 4-15-02

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2.2 Background References (those references not needed to perform work):


2.2.1 Drawings:

- a. Bechtel Drawing M-217, Sh. 1, P&ID of Auxiliary Feedwater System
- b. Bechtel Drawing P-103, Stress Isometric of Emergency Feedwater Pumps to Main Feedwater Lines 4" & 3"-DB-3

2.3 Installation Preparation Activities

- 2.3.1 A Bill of Material (BOM) is attached to this IWP or is included on the Working Drawing.
- 2.3.2 The Responsible Engineer has assured that all materials on the BOM are on site, available for the modification, and QA released.
- 2.3.3 The Responsible Engineer has verified that all calculation Addenda specified on PBF-1606 have been approved prior to the start of work.
- 2.3.4 New CHAMPS label for 2RO-4003 is required and has been requested.

The RE has assured that all of the above Installation Preparation Activities are complete.


RE  Date 4-15-02

2.4 Pre-Installation Discussions

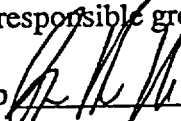
- 2.4.1 A pre-installation discussion with the Installation Group representative, the Testing Group representative, and the Acceptance Group representative has been performed.

RE/IS  Date 04/15/02

- 2.4.2 A field walkdown has been performed, if necessary, to verify that all aspects of the procedure may be performed as intended.

IS  Date 04/15/02
Support personnel & Security per 4-15-02

- 2.4.3 A commitment has been obtained from Security to support fire watch requirements. Record the responsible group below.

Fire Watch Support Group  Date 4/15/02

AUX FEED WATER PUMP 2P-29 MINIMUM FLOW
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- 2.4.4 Foreign material exclusion (FME) shall be controlled per NP 8.4.10, Exclusion of Foreign Material from Plant Components and Systems, and PBF-9158, FME Checklist.

RE/IS

Date

12/15/02

2.5 Personnel Safety Concerns

The following precautionary personnel safety requirements are recommended for this IWP:

- 2.5.1 Caution should be exercised when lifting or rigging components.
- 2.5.2 This installation will take place in an area of increased fire awareness. Installation personnel shall take precautions against fire hazards. Care should be taken not to allow combustibles to extend from the 2P-29 cubicle to the adjacent AFP cubicles.
- 2.5.3 Care should be taken during welding to prevent the halon system in the auxiliary feedwater pump room from actuating. This may be accomplished by removing from service any fire sensors in the 2P-29 cubicle or in the area of the welding.
- 2.5.4 Aux. Feedwater pump 2P-29 minimum recirculation line does not have drain connections. To allow this line to drain, the downstream flange for metering orifice 2FE-4049 will be broken open. The safety cautions of MI 32.8, Guidelines for Opening Piping Systems shall be utilized.

The Installation Supervisor is aware of the above listed safety concerns.

IS

Date

12/15/02

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2.6 Identification of Permits Required

- 2.6.1 Work Order # 9944189 for this IWP has been written and submitted to CHAMPS. The Work Order number has been recorded on the IWP coversheet.
- 2.6.2 Ignition control permit is required for welding and shall be obtained by the Installation Supervisor when needed.

The Installation Supervisor has assured that all necessary permits for this installation will be obtained.

IS  Date 09/15/12

2.7 Pre-Installation Work

NOTE: The following work will be performed under other work orders.

- 2.7.1 Orifice has been flow tested, and test data is satisfactory.
- 2.7.2 Pre-fabricate piping assembly, including replacement orifice 2RO-4003, in accordance with the Working Drawing SK-MR-99-029*D under WO 9950215.

RCC 4-15-12
RE/Date

BJV 4-15-12
MT/Date

2.8 Operational Installation Prerequisites

- 2.8.1 This installation will be performed during the Unit 2 Reactor being in Hot Shutdown (Mode 4), Cold Shutdown (Mode 5) and/or Refueling (Mode 6) operating condition. If the installation is performed with Unit 2 in any other mode of operation, appropriate action statements per LCO 3.7.5 shall be performed.

NOTE: The following step indicates a *RECOMMENDED* Danger Tag Series. This may be altered depending on the plant conditions or other work being performed on the auxiliary feedwater system as determined by OPS. Note that WO 9914184 has been initiated to oversize other welds on the mini recirc line for 2P-29.

- 2.8.2 Prepare a Danger Tag Series to isolate the 2P-29 minimum recirculation line from flow element FE-4049 to valve 2AF-53.

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DO NOT HANG the tags until instructed to do so in Section 3.0.

Recommended tag series:

- a. Valve 2AF-00053, Pump 2P-29 Mini Recirc Outlet, CLOSED
- b. Valve 2AF-04002, Pump 2P-29 Mini Recirc Control, CLOSED
- c. Valve 2MS-02019, HX-1B SG Steam Supply to P-29 AFP CLOSED
- d. Valve 2MS-02020, HX-1A SG Steam Supply to P-29 AFP CLOSED

DANGER TAG SERIES: 2 AF P-29 MM REV 0-1

2.8.3 Release For Installation

All of the above operational installation prerequisites have been met and it is acceptable to proceed with the installation.

DSS M M / H Date 4/17/2 Time 0615

BEST COPY AVAILABLE

AUX FEED WATER PUMP 2P-29 MINIMUM FLOW
RECIRC LINE ORIFICE
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3.0 INSTALLATION

3.1 QC Requirements

Hold, inspect, or witness points are included, as needed, in the body of the installation description. QC shall witness final torquing of flange bolts for FE-4049 orifice.

3.2 Installation Description

NOTE: The following is a detailed step-by-step listing of the actions necessary to perform this IWP. The steps are to be performed in a logical work order. Work can be performed in an order other than as written at the discretion of the Responsible Engineer or the Installation Supervisor.

3.2.1 Hang the Danger Tag Series prepared in Step 2.8. ^{2 m.a.s.-02} ₁₋₁₄₋₀₂

mm 4/17/02
OPS/Date

CAUTION

Aux. Feed. pump 2P-29 minimum recirculation line does not have a drain connections. To allow system to drain, downstream flange of metering orifice 2FE- 4049 shall be broken open. Safety caution of MI 32.8, Guidelines for Opening Piping Systems shall be observed.

3.2.2 Install temporary supports on recirc piping if necessary.

NA BTN 4-17-02
MT/Date

3.2.3 Drain and vent Line 2"-DB-3 ^{3/11/02} by ~~breaking the flange at orifice 2FE-4049~~. Control drainage as well as possible by using hoses and catch basins.

Note: Coordinate with Operations as necessary.

RAJ 4-17-02
MT/Date

CAUTION

If leakage past isolation valve 2AF-53 is seen, STOP work and contact the job supervisor or RE immediately.

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CAUTION

Take extreme care to apply all possible fire protection precautions in the AF pump 2P-29 cubicle.

- 3.2.4 Disconnect instrument tubing from 2FE-4049 downstream flange.
- 3.2.5 Remove the piping assembly, including orifice 2RO-4003, as required per Working Drawing SK-MR-99-029*D. The U-bolt for the support just downstream of 2FE-4049 will have to be removed.

Note exact orientation of 2FE-4049 orifice plate before removing. Record any orientation information below, and retain the orifice for reinstallation later.

Flange not removed. REC 4-17-02

N/A 4-17-02
MT/Date

N/A
REC 4-17
MT/Date

FME HOLD POINT

- 3.2.6 Perform FME cleanliness inspection and install temporary FME covers on all unattended open pipe ends. The guidelines of the FME "Checklist", PBF-9158, shall apply to this IWP.
- 3.2.7 Cut the 2FE-4049 flange and pipe stub from piping assembly removed in Step 3.2.5 at the elbow closest to the flange. Flange and stub piece can be re-used. Save all other pipe for examination by Engineering.

RAW 4-17-02
MT/Date

RAW 4-17-01
MT/Date

FME HOLD POINT

- 3.2.8 Prior to installation, perform FME cleanliness inspection of the 2FE-4049 flange with pipe stub, and the upstream piping.

RAW 4-17-01
MT/Date

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- 3.2.9 Install the 2FE-4049 orifice and flange including pipe stub cut out in Step 3.2.4. Check orientation of orifice before installing.

N/A REC
4-17
MT/Date

QC HOLD POINT

not needed because flange not broken REC 4-17

- 3.2.10 Torque bolts using a staggered pattern. Torque the bolts to 255 Ft-Lbs (+/-) 12 Ft-Lbs in accordance with PBF-9142.

QC SHALL witness final torquing of bolts.

N/A REC

M&TE: _____

Cal. Due Date: _____

Final "As Left" torque value: _____

QC _____ Date _____

REC 4-17
MT/Date

CAUTION

2AF-53 is an isolation tagout boundary valve. It will not be possible to open this valve while welding. Take steps as necessary to keep the valve from getting too hot.

FME HOLD POINT

- 3.2.11 Prior to installation, perform FME cleanliness inspection of the piping assembly pre-fabricated in Step 2.7.3.

REC 4-17-01
MT/Date

- 3.2.12 Install the piping assembly pre-fabricated in Step 2.7.3 in accordance with Working Drawing SK-MR-99-029*D and the weld map (Attachment C). Perform fitup only with tack welds, and check that fitup meets ASME B31.1 requirements.

Note: Some of the welds below will be fitup under WO 9950215.

Weld #1	By: <u>Randy WAGNER</u>	Date: <u>4-17-02</u>
Weld #2	By: <u>WO# 9950214</u>	Date: _____
Weld #3	By: <u>WO# 9950214</u>	Date: _____
Weld #4	By: <u>WO# 9950215</u>	Date: _____

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Weld #5 By: WO# 9950215 Date: _____
Weld #6 By: WO# 9950215 Date: _____
Weld #7 By: RANDY WAGNER Date: 4-17-02

- 3.2.13 Perform root welds in accordance with Working Drawing SK-MR-99-029*D and the weld map (Attachment C).

Note: Some of the welds below will be welded under WO 9950215.

Weld #1 By: RANDY WAGNER Date: 4-17-02
Weld #2 By: WO# 9950214 Date: _____
Weld #3 By: WO# 9950214 Date: _____
Weld #4 By: WO# 9950215 Date: _____
Weld #5 By: WO# 9950215 Date: _____
Weld #6 By: WO# 9950215 Date: _____
Weld #7 By: RANDY WAGNER Date: 4-17-02

NDE HOLD Point

- 3.2.14 Perform visual examination (VT) of all field root welds. The acceptance criteria for piping welds are ASME B31.1 – 1992 and Working Drawing SK-MR-99-029*D.

Note: Some of the welds below will be examined under WO 9950215.

Weld #1:	<input checked="" type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<u>02 4-17-02</u>
Weld #2:	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
Weld #3:	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
Weld #4:	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
Weld #5:	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
Weld #6:	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
Weld #7:	<input checked="" type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<u>02 4-17-02</u>

Note: If an unsat inspection condition is identified, NDE will not sign off this step until the appropriate evaluation and /or rework along with re-inspection has been accomplished.

BV 418-02
NDE/Date

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NDE HOLD Point

- 3.2.15 Perform penetrant examination (PT) of all field root welds.
The acceptance criteria for piping welds are ASME B31.1 –
1992 and Working Drawing SK-MR-99-029*D.

*Note: Some of the welds below will be examined under WO
9950215.*

Weld #1:	<input checked="" type="checkbox"/> Sat	<input type="checkbox"/> Unsat	Q2 4-17-02
Weld #2:	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
Weld #3:	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
Weld #4:	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
Weld #5:	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
Weld #6:	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
Weld #7:	<input checked="" type="checkbox"/> Sat	<input type="checkbox"/> Unsat	Q2 4-17-02

Note: If an unsat inspection condition is identified, NDE
will not sign off this step until the appropriate
evaluation and /or rework along with re-inspection
has been accomplished.

ROY 4-18-02
NDE/Date

- 3.2.16 Perform final welds in accordance with Working Drawing
SK-MR-99-029*D and the weld map (Attachment C).

*Note: Some of the welds below will be welded under WO
9950215.*

Weld #1	By: <u>RANDY WAGNER</u>	Date: <u>4-18-02</u>
Weld #2	By: <u>WO# 9950215</u>	Date: _____
Weld #3	By: <u>WO# 9950214</u>	Date: _____
Weld #4	By: <u>WO# 9950215</u>	Date: _____
Weld #5	By: <u>WO# 9950215</u>	Date: _____
Weld #6	By: <u>WO# 9950215</u>	Date: _____
Weld #7	By: <u>RANDY WAGNER</u>	Date: <u>4-18-02</u>

AUX FEED WATER PUMP 2P-29 MINIMUM FLOW
RECIRC LINE ORIFICE
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NDE HOLD Point

- 3.2.17 Perform visual examination (VT) of all field final welds. The acceptance criteria for piping welds are ASME B31.1 - 1992 and Working Drawing SK-MR-99-029*D.

Note: Some of the welds below will be examined under WO 9950215.

Weld #1:	<input checked="" type="checkbox"/> Sat	<input type="checkbox"/> Unsat	RGA 4/18/02
Weld #2:	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
Weld #3:	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
Weld #4:	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
Weld #5:	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
Weld #6:	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
Weld #7:	<input checked="" type="checkbox"/> Sat	<input type="checkbox"/> Unsat	RGA 4/18/02

Note: If an unsat inspection condition is identified, NDE will not sign off this step until the appropriate evaluation and /or rework along with re-inspection has been accomplished.

- 3.2.18 Torque bolts on pipe support next to 2FE-4049 to a nominal 6 ft-lbs. *Support not disassembled. rec*

M&TE: _____

Cal. Due Date: _____

Final "As Left" torque value: _____

4/18/02
RGA
NDE/Date

- 3.2.19 Mark-up Working Drawing SK-MR-99-029*D to indicate new as-installed configuration of this modification. *N/A rec*

rec 4-17
MT/Date

rec 4-20
RE/Date

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- 3.2.20 Restore fire protection for AF system pump room as necessary
and notify Construction to release fire watch.

W.D. 5/11/02
OPS/Date

3.3 Clean up

Remove all construction debris, tools, and material from the work area.
Ensure all work areas meet PBNP housekeeping expectation.

IS Connolly & Ross Date 4-19-02

3.4 Installation Complete

3.4.1 As-Built Description

This IWP was installed

by: Randy W. 4-18-02 Date 4-18-02

The installation was performed in accordance with this IWP
and drawings (list revisions):

ECR(s) No. None

CR(s) No. None

Other considerations None

Attach any additional documentation of the as-built description
to this IWP.

- 3.4.2 List all calibrated equipment used during installation of this
modification on the work order.

December 4, 2001

- 3.4.3 The installation of this IWP is complete. It has been installed in accordance with this IWP and all associated ECRs.

RE Date 4-20-02
IS Date 4/19/02

4.0 TESTING

4.1 Testing Information

- 4.1.1 The acceptance tests for this modification are:

- a. Initial Service Leak Test performed at normal operating pressure and temperature (with pump running)
- b. Functional Test of new orifice 2RO-4003 to verify acceptable recirculation flow.

- 4.1.2 The intent of the testing is to:

- a. Verify the functional performance of new orifice.
- b. Verify the integrity of the modified piping.
- c. Verify that all new welds associated with modified piping are leak tight.
- d. Satisfy the pressure testing requirements of NP 7.4.1.

- 4.1.3 Acceptance criteria for the testing is as follows:

- a. Piping and fittings within the modified piping boundary shall not show any evidence of structural distress (bulging or deformation) at normal AF system operating temperature and pressure.
- b. Piping and fittings within the modified piping boundary shall not show any evidence of through-wall leakage at any new welds at normal AF system operating temperature and pressure.
- c. New orifice 2RO-4003 flow reading must be between 120 and 130 gpm.

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4.2 Pre-Test Requirements

4.2.1 Remove the Danger Tags that were hung in Step 3.2.1.

my 5/11/02
OPS/Date

4.2.2 Fill and vent auxiliary feedwater system and prepare 2P-29 for operation as described in OI-62B.

my 5/11/02
OPS/Date

4.3 Release for Testing

4.3.1 The auxiliary feedwater pump 2P-29 is available as required to be started for testing. Testing can start.

DSS M. Delg Date 5/11/02 Time 0132

4.4 Testing

Note: Sound and vibration data may be collected as directed by the System Engineer while the pump is running during OI-62B.

4.4.1 Start 2P-29 per OI-62B (or other procedure).

JS 5/11/02
OPS/Date

4.4.2 While pump is running, take flow readings below:

Flow Reading 2FIT-4049 121 gpm.

RCC 5/11/02
ENG/Date

Flow Reading UT # 1 127 gpm.

RCC 5/11/02
ENG/Date

Flow Reading UT # 2 115* gpm.

RCC 5/11/02
ENG/Date

Acceptance criteria: The flow reading must be between 120 and 130 gpm. If 2RO-4003 Performance Test is unacceptable, manually adjust the 2RO-4003 per Attachment B.

Opened orifice approx 1/4 turn.

* UT #2 reading affected by P-35A/B
raise flow. This is acceptable.

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4.4.3 When flow is acceptable, ^{RCC 5-11-02} ~~red~~-lock orifice with safety wire
(provided by vendor).

4.4.4 Mark orifice position using indicating plate.

^{RCC 5-11-02}
RCC RE-OPS/Date
^{RCC 5-11-02}
RE/Date

CAUTION

Use caution when examining piping and welds. The
system operating pressure may be in excess of 1300 Psig.

4.4.5 Perform the Initial Service Leak Test of the new piping and
welds while the pump 2P-29 is running in recirculation mode.
Examine for leakage all new joints. Record results of the Initial
Service Leak Test below and in the attached PBF 0042a&b:

Leak test SAT.	RCC 5-11-02

Acceptance criteria: No visual evidence of weeping or leaking
at tested fittings and joints.

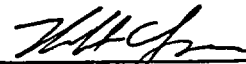
4.5 **Testing Results**

4.5.1 Attach any additional testing documentation to this IWP.

4.5.2 List all calibrated equipment used during testing of this
modification.

UT #1	CEFM-002	Cal du 10-11-03
UT #2	CEFM-004	Cal du 2-17-03

4.5.3 The testing is completed and all Acceptance Criteria have been
met.

Testing Supervisor  Date 5-11-02

AUX FEED WATER PUMP 2P-29 MINIMUM FLOW
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5.0 RESTORATION

5.1 Pre-Acceptance

5.1.1 The following items must be completed prior to acceptance:

- a. All ECRs have final approvals.
- b. All update items required prior to acceptance on PBF-1606 have been completed.
- c. All testing described above has been satisfactorily completed.

All of the above items have been completed.

RE [Signature] Date 5-11-02

5.2 System Restoration

5.2.1 Close out any remaining tagouts and permits for this IWP.

5.2.2 Aux Feedwater pump 2P-29 is ready for release for operation.

DSS [Signature] Date 5/11/02 Time 0240

6.0 ACCEPTANCE

6.1 Verify systems and components affected by this modification are placed in an appropriate condition for present plant configuration.

6.2 If fire rounds in progress, then discontinue fire rounds.

6.3 Final Acceptance

This installation and the associated modification have been installed and tested and are acceptable.

DSS [Signature] Date 5/11/02

[Signature] 5/11/02
OPS/Date
NIA 5/11/02
OPS/Date

Return completed IWP and modification to Responsible Engineer

NUCLEAR POWER BUSINESS UNIT
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ATTACHMENT A
BILL OF MATERIAL

Item	SR	Size	Description	Model Number	Qty	Lot No. / PO	Comments
1	S	2"	Pipe, Sch. 80		5ft	9017551	Seamless Stainless Steel, ASTM A-312, Type TP 316
2	S	2"	Elbow, 90 deg., 3000lb, socket weld		2	9015019	ASTM A-182, Grade F-304
3	S	2"	Pressure Reducing Device	Flowserve 94-16249	1	4500429416	ASTM A-351 Type CF8M body, A-479 Type 316 bonnet, 600# class, Socket Weld ends
4	N	2"	Gasket, Flexitallic		2	9154223	Flexitallic, 1500 Lb., Blue Asbestos and 304 S.S.

ATTACHMENT B

2RO-4003 Manual Adjustment Steps (Reference drawing 94-16249)

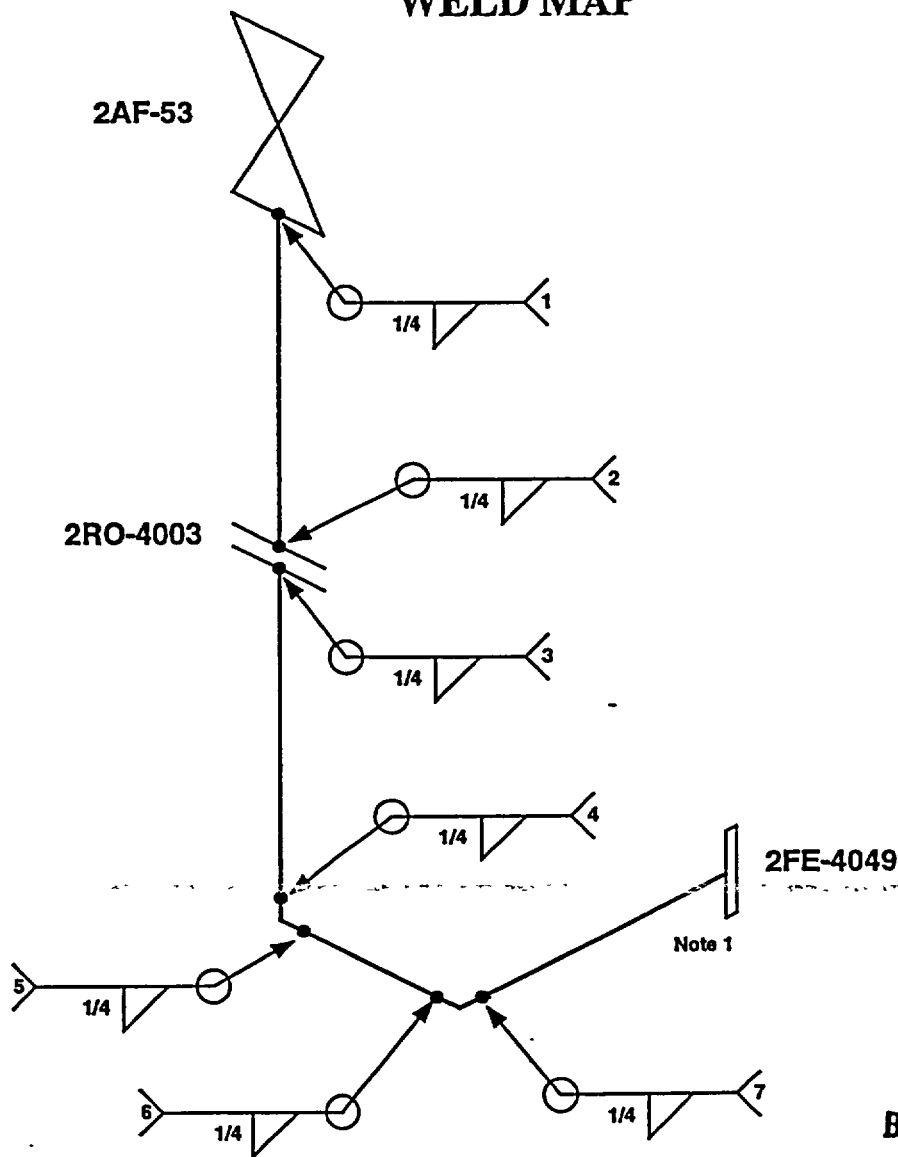
- B.1. Remove safety wire (Item 260).
- B.2. Loosen jam nut (Item 244).
- B.3. Rotate stem as necessary with the pin nut (Item 235P) to adjust flow – *clockwise will reduce flow*.
- B.4. Tighten jam nut (Item 244).
- B.5. Retest per Section 4.4.
- B.6. If test is satisfactory, then install safety wire (Item 260).

AUX FEED WATER PUMP 2P-29 MINIMUM FLOW
RECIRC LINE ORIFICE
UNIT 2

December 4, 2001

ATTACHMENT C

WELD MAP



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Notes:

- 1 - No oversizing needed on butt weld at flange. Pipe section welded to flange may be re-used.
- 2 - Weld #1 is P1 to P8. All other welds are P-8 to P-8.
- 3 - All welds shall be oversized (2x1) per SK-MR-99-029*D.
- 4 - Add field weld flags to this weld map, based on how the piping was installed.

Nuclear Power Business Unit
WELD CHECKLIST

WO 9944189 Date 01/15/02

Describe weld, repair, or inspection (identify applicable code and edition, B31.1, ASME Section IX, AWS D1.1, etc.)

Valve Body SW, A105 CS, to 2" Sch. 80 Pipe ASTM A-312 TP 316 (Weld #1)

ISE Engineer Notified For Section XI Scope Repairs YES NO XX

Material to be joined P-1 to P-8

NDE Requirements:

Filler metal to be used ER 309/ E309-16

Radiography Test (RT)

Thickness of weld joint See SK-MR-99-029*D

Magnetic Particle Test (MT)

Thickness of base metal 0.218"

Dye Penetrant Test (PT) XX

Preheat Required 70° F.

Visual Test (VT) XX

Postweld Heat Treatment None

Hydrostatic Test

Weld Procedure Specification WP-4

VT & PT of Root Weld required. Final VT of all welds required.

Review welders' performance qualification records and list those welders qualified for the base material and thickness.

Qualified Welders:

Brad Eichhorn *TIG only.
Randy Wagner

[Signature]
MTN Planner/Supervisor or MPE Engineer

4/17/02
Date

Job completed utilizing the above information, and the noted weld procedure and weld information has been recorded in Welder's Logbook.

[Signature]
Welder

4-18-02
Date

WO reviewed for documentation of weld rod Lot Numbers and QAR Numbers and successful completion of Indicated NDE.

[Signature]
MTN Supervisor

4/19/02
Date

Nuclear Power Business Unit
WELD CHECKLIST

WO 9944189 Date 03-21-02

Describe weld, repair, or inspection (identify applicable code and edition, B31.1, ASME Section IX, AWS D1.1, etc.)

2" S.S. Sch. 80 Pipe, ASTM A-312, Type TP 316 to 2" Elbow, 90 deg., 3000# ASTM A-182, Grade F-304

Weld number 7

ISE Engineer Notified For Section XI Scope Repairs YES NO XX

Material to be joined	<u>P-8 to P-8</u>
Filler metal to be used	<u>ER-316/E-316</u>
Thickness of weld joint	<u>* 1/4" x 1/2"</u>
Thickness of base metal	<u>0.218"</u>
Preheat Required	<u>50° F.</u>
Postweld Heat Treatment	<u>None</u>
Weld Procedure Specification	<u>WP-2</u>

NDE Requirements:

Radiography Test (RT)	<u>No</u>
Magnetic Particle Test (MT)	<u>No</u>
Dye Penetrant Test (PT)	<u>Yes</u>
Visual Test (VT)	<u>Yes</u>
Hydrostatic Test	<u>No</u>

* Weld sizes per dwg. SK-MR-99-029*D DETAIL 1 and Notes

Review welders' performance qualification records and list those welders qualified for the base material and thickness.

Qualified Welders:

Grad Eichhorn
Randy Wagner

#TB only.

[Signature]
MTN Planner/Supervisor or MPE Engineer

04/19/02
Date

Job completed utilizing the above information, and the noted weld procedure and weld information has been recorded in Welder's Logbook.

Randy Wagner
Welder

4-18-02
Date

WO reviewed for documentation of weld rod Lot Numbers and QAR Numbers and successful completion of Indicated NDE.

[Signature]
MTN Supervisor

4/18-2
Date

Chapman, Rob

From: Chapman, Rob
Sent: Tuesday, May 14, 2002 1:36 PM
To: Siercks, Harold
Subject: design description for MR 99-029*D

Attached.



MR29ADESDESCR
.doc

Rob Chapman
Mechanical Design Engineering
Point Beach Nuclear Plant
Ph 920-755-7636
Fax 920-755-7410

Chapman, Rob

From: Barrows, John
Sent: Sunday, February 24, 2002 9:45 AM
To: Chapman, Rob
Subject: RE: TWR no.

reference TWR 00-046 used for the other 2 orifice replacements. No training required per the notes I have.

John

-----Original Message-----

From: Chapman, Rob
Sent: Wednesday, February 20, 2002 11:20 AM
To: Barrows, John
Subject: TWR no.

What is the TWR for MR 99-029*C?

Chapman, Rob

From: Chapman, Rob
Sent: Wednesday, May 08, 2002 8:41 AM
To: Glaser, Jill
Subject: RE: EPIX update

Jill -

- Component ID: 2RO-4003 (1RO-4003 will be replaced during U1R27 this fall too)
- Function: Pressure/flow reduction (use pressure control) on auxiliary feedwater pump minimum flow recirculation line (flow reduction on recirc needed to ensure that AFP will provide adequate flow to the steam generator in accident scenarios)
- Size: 2" (NPS)
- Operator: It is a manual operator (the orifice doesn't have a handwheel like a normal valve. It has to be adjusted with a wrench)
- 2RO-4003 was installed during U2R25 (during week of 4-15 to 4-19 - testing has not yet been completed)
- It replaced the existing 2RO-4003 orifice, which was not adjustable, and was not anything like a valve. It was a tube with drilled plates inside.

Thanks.

Rob

Rob Chapman
Mechanical Design Engineering
Point Beach Nuclear Plant
Ph 920-755-7636
Fax 920-755-7410

-----Original Message-----

From: Glaser, Jill
Sent: Wednesday, May 08, 2002 7:27 AM
To: Chapman, Rob
Subject: RE: EPIX update

What is the component ID? What function does this valve serve (i.e., one-way flow, bypass, level control, pressure control, pressure relief, drain, vent, shutoff/isolation/stop), what is the nominal inlet size, what type of operator (balance, ball, electric motor/servo (MOV), hydraulic, manual, mechanical, none, piston, pneumatic, solenoid)?

Also, when was this installed? Did it replace an existing valve?

-----Original Message-----

From: Chapman, Rob
Sent: Tuesday, May 07, 2002 7:35 PM
To: Glaser, Jill
Cc: Chapman, Rob
Subject: EPIX update

MR 99-029*D installed a Valtek Mark I pressure reducing device (orifice). This orifice is essentially a globe valve without a handwheel and some cavitation control trim inside.

Let me know what additional information you need, and I will transmit.

Thanks.

Rob

Chapman, Rob

From: Chapman, Rob
Sent: Tuesday, May 07, 2002 7:33 PM
To: Engleman, Christopher; Krause, Diane
Subject: PO 4500429416 closure

If it has not been done already, could one of you close PO 4500429416, which purchased the 2RO-4003 orifice from Flowserve. This is an item on the closeout checklist for the mod.

Thanks.

Rob

Rob Chapman
Mechanical Design Engineering
Point Beach Nuclear Plant
Ph 920-755-7636
Fax 920-755-7410

Chapman.Rob

From: Chapman.Rob
Sent: Monday, December 03, 2001 4:33 PM
To: 'afoltyno@dukeengineering.com'
Cc: Chapman.Rob
Subject: MR 99-029*D

Alex -

I thought it would be a good idea to email my comments / changes to the mod package. Your email response will be attached to the mod as the basis for your signature.

The major changes that were made are below. Please call if you would like to discuss.

Thanks.

Rob

Changes to MR 99-029*D

Design Description

- Added reference to pinhole leaks and RCE 99-081
- Added discussion about flow rates (120-130 gpm)
- Added reference to other weld procedure WP-8 for CS to SS weld at 2AF-53 (valve is carbon steel)

50.59

- Changed from an evaluation to a screening (done under New Rule)

Installation Work Plan

- Changed CE to MT
- Removed requirement for temporary support (based on walkdown with MT)
- Added step to disconnect flange tubing
- Referenced pre-fab work orders
- Added NDE signoffs for each weld
- Added a weld map
- Added reference to WP-8
- Added step to torque U-bolt for pipe support
- Separated root weld and final weld steps
- Added step to verify calc addenda are done prior to work beginning
- Removed reference to scaffolding
- Added reference to OI-62B for running the pump

Rob Chapman

Chapman.Rob

From: Alex Foltynowicz [afoltyno@dukeengineering.com]
Sent: Tuesday, December 04, 2001 8:13 AM
To: Chapman.Rob
Subject: Re: MR 99-029*D

Rob,

I have reviewed your comments/changes pertaining to the Subject modification package. I agree with all the comments you have made and concur with the changes that you are proposing.

Alex

WISCONSIN ELECTRIC POWER COMPANY
POINT BEACH NUCLEAR PLANT
AUX. FEEDWATER SYSTEM
PRESSURE REDUCING DEVICE
DATA SHEET 1 OF 2

IDENT.	1	DESCRIPTION: ADJUSTABLE PRESSURE REDUCING DEVICE (APRD)		
	2	QUANTITY REQUIRED: 1	TAG NO.: 2RO-04003	P & ID NO: BECH. 6118 M-217 SH. 1
	3	CODE CLASS: ASME/ANSI B31.1 – 1967 Edition through 1995 Edition ASME/ANSI B16.34 – 1973 Edition through 1998 Edition		
	4	SAFETY RELATED: YES (DEVICE BODY & WELDS-100% RT)		SEISMIC CLASS: YES – 1
SERVICE	5	FLUID: 1. NORMAL OPERATION: FILTERED & DEMINERALIZED WATER 2. EMERGENCY OPERATION: SERVICE WATER		
	6	PUMP DISCHARGE PRESSURE (PSIG):	DESIGN 1440	MINIFLOW 1370
	7	APRD INLET PRESSURE (PSIG):	1440	1350
	8	APRD OUTLET PRESSURE (PSIG):	50	15
	9	TEMPERATURE (°F)	32 - 120	32 - 120
	10	PREDICTED FLOW RATE: BY VENDOR		
	11	SERVICE CONDITION: FLOW CONTROL AND PRESSURE REDUCTION		
	12	PUMP RATED FLOW - APRD ASSOCIATED: 400 GPM		
	13	REQUIRED APRD FLOW (MIN/MAX): 120 / 130 GPM		
	14	PIPING & FITTINGS ΔP UP TO INLET OF APRD: 20 PSIG		
	16	MAX. ALLOWABLE SOUND LEVEL: 75 DBA (THREE FT AWAY FROM THE APRD-UNINSULATED)		
	BODY	15	APRD BODY SIZE: 2 INCH	
16		APRD DESIGN RATING (ANSI PRESSURE CLASS): BY VENDOR		
17		APRD BODY MATERIAL: BY VENDOR (STAINLESS STEEL)		
18		END CONNECTIONS : SOCKET WELD		
19		CONNECTING PIPE SIZE/SCHEDULE: 2 IN / SCH. 80		
20		BODY LENGTH END-TO-END: BY VENDOR		WEIGHT: BY VENDOR
REVISION		PREPARED BY:	<i>A. Folger</i>	DATE: 07-24-01
		REVIEWED BY:	<i>John P. Schroeder</i>	DATE: 07/24/01
		APPROVED BY:	<i>Hei. Chen Yeong</i>	DATE: 7/26/01

WISCONSIN ELECTRIC POWER COMPANY
POINT BEACH NUCLEAR PLANT
AUX. FEEDWATER SYSTEM
PRESSURE REDUCING DEVICE
DATA SHEET 2 OF 2

ADDITIONAL REQUIREMENTS

1. Adjustable pressure reducing device (APRD) assembly shall be designed to withstand seismic loading equivalent to 3.0 g in the horizontal direction and 2.0 g in the vertical direction. When exposed to the above loading the APRD shall be capable of performing all its functions. Vendor shall furnish seismic analysis and design report for Purchaser's review.
2. Hydrostatic testing of the APRD body shall be conducted in accordance with ASME/ANSI B 16.34 except that the test pressure shall be maintained for at least 30 minutes.
3. All materials in contact with the working fluid shall be austenitic stainless steel.
4. Castings and wrought materials procured for the manufacture of valve body and trim shall be in accordance with applicable ASTM and ASME specifications and Certified Material Test Reports shall be furnished.
5. All welding shall be in accordance with ASME Section IX requirements.
6. Examination requirements for pressure retaining parts of the APRD shall be in accordance with ASME/ANSI 16.34, Section 8.0. In addition, radiographic examination shall be performed in accordance with ASME Section V, Article 2.
7. Provide calculation certifying that the design flow comply with Data Sheet 1 requirements. This calculation shall be reviewed and accepted by NMC prior to APRD fabrication.
8. The APRD flow rate adjusting device shall be equipped with means to secure APRD position using a lockwire attached to the stem and bonnet.
9. Fabrication drawing, indicating APRD parts list and their associated ASME/ANSI standards, shall be submitted for NMC approval prior to APRD fabrication.
10. Provide Certificate of Compliance attesting that the APRD is designed in accordance with P.O. specified requirements.
11. Provide eight (8) copies of Instruction Manuals for APRD including Parts List and Part Numbers.

REVISION	PREPARED BY:	<i>A. Folger</i>	DATE:	<i>07-24-01</i>
	REVIEWED BY:	<i>John P. Schroeder</i>	DATE:	<i>07/25/01</i>
	APPROVED BY:	<i>Spri Quin-Hong</i>	DATE:	<i>7/26/01</i>

QAS SUPPLIER SURVEILLANCE REPORT

Activity Description: Source Surveillance of Flow Testing of a Flowserve Valve

Activity Date: April 2 - 3, 2002 **P.O. No.:** PO P001901

Supplier Name: Colorado Engineering Experiment Station, Inc.

Location: Nunn, CO

Reference Material: Purchase Order

Deficiency Nos.: None

Copies To: R. Chapman, T. Koeslin, C. Engleman, File Q1.3.1

Summary:

On April 2 - 3, 2002, a source surveillance was conducted at Colorado Engineering Experiment Station, Inc. (CEESI) in Nunn, CO. The source surveillance verified activities associated with the flow testing of pressure reducing device installed in a 2"-600#, socket welded, globe valve body.

Flow testing was performed at the specified inlet pressure. The flow rate was adjusted to the required flow. The resulting outlet pressure was found to be somewhat above the specified pressure. The inlet pressure was increased enough so that the pressure differential between the inlet and outlet pressure was as required and the flow rate was found to be within the required range.

Contacts: Mike Knotts - Flow Measurement Technician, CEESI

1. Was the valve in the original package when received?

The valve was in the box when received. The box had been opened to inspect for damage during transit. The valve was removed from the box after arrival at CEESI.

The QC tag was attached to the valve throughout testing of the valve which provided traceability for the valve. (S/N D440T-1-1, PO 4500429416).

2. Had any damage occurred to the valve during shipping?

No damage was noted to the box or the valve during shipping to CEESI.

3. Was any welding performed on the valve?

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No welding was performed directly to the valve body. Welds were made using the GTAW process to join two (2) 600# carbon steel slip on flanges to the pipe stubs.

4. Was machining and welding to attach the weld neck flanges to the pipe stubs controlled?

The pipe was plugged with clean towels to prevent any foreign materials from entering the pipe during the welding operations.

Welding of the flanges to the pipe stubs was made using the GTAW process. The weld was made using 309L filler material. The pipe ends were capped following welding to prevent the introduction of foreign materials.

5. Was the test system cleaned prior to testing to prevent introduction of foreign material?

The line was flushed prior to testing. The in-line Y-Type strainer was installed with .060" screen upstream of the valve.

6. Was testing performed and results recorded the flow rate (required 120 – 130 gpm) at the following service conditions:

P inlet = 1350 - 1360 psig, P outlet – 22 psig

The inlet pressure could be adjusted, the outlet pressure was recorded with the isolation valve fully open. The outlet pressure could not be reduced any more than 22 psig. The inlet pressure was adjusted to 1360 psig so that the resulting differential pressure would be about 1335 psig which was specified in the purchase order (1350 psig inlet – 15 psig outlet). This issue was discussed with the PBNP technical contact and determined to be acceptable. The flow rate at these pressures was adjusted until the flow was between 120 and 130 gpm (actual about 121 gpm).

7. Was the test pressure kept below the 1440 psig maximum?

The maximum test pressure was 1365 psig.

8. Verify the valve was not altered during testing other than any adjustment of the orifice to achieve the desired flow rate.

The valve was not altered during testing other than some adjustments to the orifice to achieve the desired flow rate.

9. Verify the vibration and noise levels were not excessive.

The valve was monitored during testing and did not exhibit any significant vibration or noise.

10. Was flow measurements taken with water at an ambient temperature below 90 degrees F?

Water temperature was below 90 degrees F for all of the testing activities (Maximum water temperature was about 66 degrees F during testing.)

11. Are instruments used to monitor pressure and temperature calibrated to standards traceable to NIST?

Instruments used during testing were verified to have been calibrated using standards traceable to NIST.

12. Is the test media clean tap water?

The test media was clean tap water which was run through a sand filter prior to flowing through the pressure reducing valve. The sand in the filter had been replaced prior to the flushing of the lines for testing.

13. Were the flanges removed from the pipe?

The flanges were sawed off of the pipe about 1/4" from the flange weld. The pipe ends were filed down to remove any burrs.

14. Is the valve rinsed clean with demineralized water prior to shipment?

The valve was rinsed with distilled water after testing and allowed to air dry. Tape was placed on both pipe ends to prevent any foreign material from getting inside the valve.

15. Is the valve packaged at the same level of protection as when it was received at CESSI?

The valve was placed back into the original wooden crate. The flanges which CEESI had welded to the pipe stubs were to be put back into the wooden crate with bubble wrap. Actual final packaging was not witnessed during the source surveillance.

16. Are there any nonconformances or other issues which require follow-up?


No nonconformances or other issues were noted during the testing activities that require follow-up.

Prepared By:


Steve Forsha

Date: April 5, 2002

Chapman.Rob


 **From:** VanderVelde.Brian
Sent: Wednesday, November 28, 2001 9:55 PM
To: Chapman.Rob
Cc: Desroches.Michael
Subject: MR 99-029*D MM Comments WO 9944189

1. Why replace the piping to build up the welds to meet EPRI guidelines? Can't the welds simply be built up? We did this on other lines in the AFP room during the last two outages.
2. Recommend doing a grammar check on the Final Design Description wording.
3. Under Design Inputs - Has the info been added to the Flowserve Pressure Reducing Orifice Drawing?
4. Are all the parts on site, (i.e., RO, piping, elbows)? If not, has the req been turned into a PO? When will the parts arrive?
5. Please work with Mike Desroches, MM planning, to create a separate work order to perform the pre-fab activities.
6. Has the new RO been pressure tested already?
7. Is the SE done and approved?
8. Unless I missed it, the design description does not mention pinhole leaks in the socket welds as being one of the reasons for building them up, yet the SE mentions it.
9. Will OPS be able to completely drain the associated piping? Are any of the isolation boundary valves work ordered for leakage? If they are, they may cause problems during welding if there is too much water in the lines.
10. Step 1.7.6 of IWP, change ENG information re: Alex.
11. Will you be around during the outage for consultation? If not, who can we work with?
12. Step 2.3.2 of IWP, add a sign off for the RE.
13. Step 3.2.3 should be done by OPS.
14. Step 2.5.3, ensure OPS adds this to their tag series.
15. IWP, change all sign offs from CE to MT.
16. Step 2.7.2, this should be done under a separate WO for scheduling purposes.
17. Do we want a fit-up inspection prior to welding?
18. Work with MM to provide sign-offs for the welders and NDE for each weld and have a weld map with each weld numbered.
19. Step 3.2.15 should be an ENG sign-off.
20. Has the IWP been reviewed by OPS to ensure the PMT is acceptable as written?
21. The steps for pre-fab and installation should have a note to allow the steps to be worked in any logical order.
22. Please get working drawings to Mike to include in the work package.
23. If scaffolding is needed, please ensure an activities are in the schedule tied to this mod installation so that the scaffolding can be put up and taken down.

Mike, please update CHAMPS to indicate 30 hours for both 430 and 441. I'd also add a resource for security if they will be required to do fire rounds. If scaffold is needed, then scaffolding will need to be changed to Y.

Brian x7177

Chapman.Rob


 **From:** VanderVelde.Brian
Sent: Thursday, November 29, 2001 9:58 PM
To: Chapman.Rob; Castro.Rito
Cc: Desroches.Michael
Subject: RE: latest IWP 99-029*D

1. Step 3.2.3, breaking the flange - not a problem for MT to break the flange. I just thought that if it was possible for OPS to do it, then the system will have all energy sources completely removed and the system drained for us before we walked the danger tag series down and worked the job. Again, no problem, leave it for MT.
2. Rito Castro, one of our lead mechanics, reviewed your package and had many of the same comments that I did. One question Rito had, do you have any details for the temporary pipe support, how it should be done, is there any seismic or structural requirements?
3. I'll wait to here from you regarding your discussion with QC and if fit-up inspections are wanted.
4. I'll wait to here from you after you've had a chance to work with Mike Desroches regarding the weld map and how MTN welding packages are arranged for welder and NDE signoffs.

Rito, please walk this piping down to determine if scaffolding is required, or if a ladder will suffice (and any other support groups needed that are not already identified). If scaffolding is required, let us know so scaffolding activities can be added to the schedule.

Thanks. Brian

-----Original Message-----

 **From:** Chapman.Rob
Sent: Thursday, November 29, 2001 5:27 PM
To: VanderVelde.Brian
Cc: Desroches.Michael
Subject: latest IWP 99-029*D

I substantially upgraded the IWP. I believe that I have incorporated all of your comments, although I still have MT breaking the flange. I will get this issue resolved. Also, I still need to do the weld map.

Take a look if you get a chance.


Thanks!

Rob

<< File: IWP29D.doc >>

Rob Chapman
Point Beach Nuclear Plant
Site Design Mechanical Engineering
Phone: 920-755-7636
Fax: 920-755-7410
Pager: 0114

Chapman.Rob

 **From:** VanderVelde.Brian
Sent: Tuesday, December 04, 2001 5:46 AM
To: Chapman.Rob
Subject: RE: AF orifice mod work plan

- ✓ 1. Step 3.2.4 - provide a place to record the exact orientation of 2FE-4049.
- ✓ 2. Step 3.2.6 - provide direction to label flange and stub piece for reuse, unless we will be immediately reusing them.
- ✓ 3. Has QC and NDE reviewed this IWP?
- ✓ 4. Step 3.2.10 and 3.2.11 and any other steps that require welding should have a line that lists the weld #, Signature line, and a Date line for the welder to sign so that each weld can be traced to the welder to ensure each specific weld can be traced to a welder that is qualified to perform that specific weld.
- 5. See my notes on the marked up IWP.

-----Original Message-----

From: Chapman.Rob
Sent: Monday, December 03, 2001 2:58 PM
To: VanderVelde.Brian
Subject: AF orifice mod work plan

Brian -

I think the work plan is almost there. I have attached the latest version. I will try to come in early tomorrow to catch you for your signature. Go ahead and email any other comments you may have.

Thanks.

 Rob

<< File: IWP29D.doc >>

Rob Chapman
Point Beach Nuclear Plant
Site Design Mechanical Engineering
Phone: 920-755-7636
Fax: 920-755-7410
Pager: 0114

- Add step + report if necessary

- Don't qn value
keep up down

CLOSEOUT EXTENSION REQUEST

The below listed MODIFICATION will not be closed per the time requirements of NP 7.2.1. Complete the justification for the extension request and obtain the required level of approval. Forward the completed request form the MODIFICATION COORDINATOR prior to the current required closeout date.

MODIFICATION: 99-029*D AUX FEED WATER PUMP 2P-29 MINIMUM FLOW
RECIRC LINE ORIFICE.

RESP ENG: Rob C. Chapman

CLOSEOUT
ASSIGNED TO:

*Rob checked
8/6*

DATE ACCEPTED: 5/11/2002

CURRENT REQUIRED CLOSEOUT DATE ^{9/13} ~~8/9/2002~~

NEW REQUESTED CLOSEOUT DATE: _____

Justification for not meeting the current closeout date:

Extension requested by: _____

Approved by: *PD/Jan* Date: 8/13/02

Note: the first extension request approval may be approved by the
FINAL DESIGN GROUP HEAD. Subsequent approvals require
DESIGN ENGINEERING MANAGER approval.



INTERNAL
CORRESPONDENCE

EDMS ☒
FILE M1.1
99-029-D

NPM 2001-0545

To: M. Schug D. Faltynski C. Onesti J. McCullum
J. P. Schroeder J. Polacek R. Chapman C. Olson

From: A. Foltynowicz *A. Foltynowicz*

Date: August 2, 2001

Subject: MR 99-029*D PACKAGE DISTRIBUTION REVIEW TRANSMITTAL

Copy To: (W/O Attachments)

R. Hornak D. Schoon J. Barrows W. Wilson
L. Armstrong
File: M1.1 MR 99-029*D

Attached is the design package for MR 99-029*D, Auxiliary Feedwater Pump 2P-29 Minimum Flow Recirc Line Orifice Replacement, for your review and comments. The supporting documents are:

- Design Description
- Design Input Checklist
- Work Order Work Plan IWP 99-029*D
- Working drawing
- 50.59 Safety Evaluation
- Documentation Update Checklist
- Bill of Materials for IWP 99-029*D

Please review the package applicable to your review and return the package with comments. I am requesting that reviews be completed by Monday, 09/07/01. Contact me at X7411 if you require additional information.

AF/cls

Attachments

REC'D AUG 14 2001