Wisconsin Electric
A WISCONSIN ENERGY COMPANY

Point Beach Nuclear Plant
6610 Nuclear Rd.
Two Rivers, WI 54241
Phone 920 755-2321

NPL 2000-0205

May 2, 2000

Document Control Desk
U.S. NUCLEAR REGULATORY COMMISSION
Mail Station P1-137
Washington, DC 20555

Ladies and Gentlemen:

DOCKETS 50-266 AND 50-301
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
RE: TECHNICAL SPECIFICATIONS CHANGE REQUEST 206, SUPPLEMENT 1
SERVICE WATER SYSTEM OPERABILITY
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

By submittal dated December 21, 1999, Wisconsin Electric Power Company (Licensee) requested amendments to Facility Operating Licenses DPR-24 and DPR-27 for Point Beach Nuclear Power Plant, Units 1 and 2, respectively, to incorporate changes to the plant Operating Licenses and Technical Specifications. The purpose of the proposed amendments was to incorporate changes to Technical Specifications section 15.3.3.D to more clearly define the requirements for Service Water (SW) System operability in accordance with the system configuration assumed in the SW System analysis.

By telecom conference on March 21, 2000 and follow-up letter dated April 19, 2000, the Nuclear Regulatory Commission (NRC) staff requested additional information in relation to analyses supporting the proposed amendments, affected system configuration and attributes, and suggested modification of the proposed Technical Specifications changes.

Responses to the questions contained in the April 19, 2000, request for additional information (RAI) are contained in Attachment 1 of this letter.

A001

Please contact us if you have any questions.

Sincerely,

A. J. Cayia
Manager,
Site Services & Assessment
Point Beach Nuclear Plant

Subscribed and sworn before me on
this 2nd day of May, 2000.

Tammy J August
Notary Public, State of Wisconsin

My Commission expires on 4-27-2003.

cc: NRC Regional Administrator
NRC Resident Inspector
NRC Project Manager
PSCW

DOCKETS 50-266 AND 50-301
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
RE: TECHNICAL SPECIFICATIONS CHANGE REQUEST 206, SUPPLEMENT 1
SERVICE WATER SYSTEM OPERABILITY
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

The following information is provided in response to the Nuclear Regulatory Commission (NRC) staff's request for additional information dated April 19, 2000, related to Wisconsin Electric's request for amendments dated December 21, 1999. The purpose of the requested amendment was to incorporate changes to the Technical Specifications to more clearly define the requirements for Service Water (SW) System operability in accordance with the system configuration assumed in the SW System analysis.

Each question is restated below with Wisconsin Electric's response following.

1. **Attachment 1, page 3 of 5; second paragraph under Basis for Change refers to modifications to provide redundant automatic isolation of non-essential loads; and Attachment 5, page 5, the first paragraph indicates that if isolation of an affected line is not required for accident mitigation, then the limiting condition for operation (LCO) in question would not apply.**

   a. **On a simplified diagram, indicate which flowpaths currently have redundant automatic isolation capability, which flowpaths are scheduled to have redundant automatic isolation capability installed along with the completion dates, which flowpaths are not required to be isolated for accident mitigation, and pipe diameters of these flowpaths.**

   Response:

   See attached drawing, "Simplified Service Water System Diagram".

   Motor Operators were added to existing manual valves in the branch lines for the Spent Fuel Pool Heat Exchangers (i.e., SW-2927A and SW-2927B), the Water Treatment supply line (i.e., SW-4478) and the Primary Auxiliary Building Cooler supply line (i.e., SW-4479). The addition of all planned new motor operators is complete. The required modifications to provide the automatic isolation signals to the non-essential isolation valves is complete for Unit 1, with Unit 2 still in progress. The current status of the automatic signals and the schedules is summarized below.

   Unit 1: Final Configuration (in place):

   A Unit 1 Train "A" Safety Injection (SI) signal isolates all Train "A" non-essential SW isolation valves. (i.e., AOV: SW-LW-061 and MOVs: SW-2816, SW-2927B, SW-2930A, and SW-4478)
   A Unit 1 Train "B" SI Signal isolates all Train "B" non-essential SW isolation valves.
   (i.e., AOV: SW-LW-062 and MOVs: SW-2817, SW-2927A, SW-2930B, SW-4479)

Unit 2: After Modification 98-024*W (scheduled to be installed May 2000):

The less than 4 of 6 service water pump signal will be removed and the isolation signal for 2SW-2880 will be removed completely. After this modification package is installed, the following logic will be in place:

A Unit 2 Train "A" SI signal will isolate AOV: SW-LW-061 and MOVs: SW-2816, SW-2927B, SW-2930A.

A Unit 2 Train "B" SI Signal will isolate AOV: SW-LW-062 and MOVs: SW-2817, SW-2927A, SW-2930B.

Unit 2: After Modification 98-024*V (scheduled to be installed Fall 2000 during U2R24):

This modification package will place Unit 2 in its final configuration (identical to Unit 1) by enabling SW-4478 and SW-4479 to shut on a Unit 2 SI signal. After this modification package is installed, the following logic will be in place:

A Unit 2 Train "A" Safety Injection (SI) signal will isolate all Train "A" non-essential SW isolation valves (i.e., AOV: SW-LW-061 and MOVs: SW-2816, SW-2927B, SW-2930A, SW-4478).

A Unit 2 Train "B" SI Signal will isolate all Train "B" non-essential SW isolation valves (i.e., AOV: SW-LW-062 and MOVs: SW-2817, SW-2927A, SW-2930B, SW-4479).

The SW analysis is planned to be revised to take credit for the new redundant non-essential isolation valves and logic as they are installed. Once the analysis is revised, each of the non-essential isolation valves will be a valve *normally* required to be operable for accident mitigation. However, under certain plant conditions when other SW flowpaths are secured due to current plant conditions (e.g., turbine hall isolated during an outage, containment fan coolers (CFCs) and CC Heat Exchangers isolated during a core offload), a SW flow evaluation may be completed to show that certain non-essential flowpaths do not need to be isolated for accident mitigation. Under these conditions, with an appropriate supporting evaluation completed in advance, those isolation valves would not be "required" and the Technical Specification LCO would not apply.

b. Discuss the isolation valve leak rates and Service Water (SW) flows that are assumed for all non-essential flowpaths during accident conditions, and explain the basis for these values. Describe measures that are taken (including frequency) to assure that the actual leak rates and flows will not exceed the assumed values (e.g., valve leak rate testing and flow rate validation).

Response:

Currently, 150 gpm is modeled for leakage from the SW system, which bounds the non-essential SW isolation valve leakage. This leakage is currently modeled as a 75 gpm leak at each unit's

fan cooler supply header, since the CFCs are the most limiting component. The SW modeling group has initiated action to specifically model system leakage through the non-essential SW flowpaths in addition to a gross amount of general system leakage.

In the SW flow calculations currently being revised, a leak rate through each of the non-essential flowpaths will be modeled based on operating experience and engineering judgement. Current plans are to model 150 gpm through the Spent Fuel Pool Heat Exchangers (i.e., 8 in. butterfly valves with resilient seats), 50 gpm through the radwaste system (i.e., 8 in. butterfly valves without a resilient seat), 5 gpm through the water treatment supply valves (i.e., 6 in. gate valves) and 5 gpm through the PAB cooling coil supply valves (i.e., 6 in. gate valves). Additionally, 75 gpm is planned to be modeled for miscellaneous system leakage that could occur from sources such as valve packing or valves forming an isolation boundary for system maintenance.

An annual periodic callup, PC 10.3, "SFP and Radwaste SW Valve Leak Checks", is in place to leak test the butterfly valves. The periodic check measures the leak rates and then requires these leak rates to be compared to the SW flow analysis to verify operability. Based on operating experience and engineering judgement, leak tests have not been considered necessary on the 6 in. gate valves since the modeled leakage is conservative.

c. **Briefly describe any additional measures that are taken (including frequency) to assure the continued functionality of the SW system boundary isolation valves (e.g., in-service testing, periodic maintenance). Indicate which tests (if any) are required by the Technical Specifications.**

Response:

In addition to the annual callup, PC 10.3, "SFP and Radwaste SW Valve Leak Checks", referenced above in (1b), the non-essential SW isolation valves are stroke tested quarterly per inservice test procedure IT-72, "Service Water Valves". This is required by Technical Specifications and the IST program. The motor operators on the non-essential SW isolation valves are within the MOV program established in accordance with GL 89-10. Periodic maintenance callups are in place for MOV checkouts and rebuilds. Preventive maintenance callups are in place, or have been initiated, to overhaul the valve internals of the Spent Fuel Pool MOVs to ensure leak tightness of the valves. The non-essential SW isolation AOVs are in the AOV program, and a periodic callup is in place to perform periodic diagnostic stroke testing. The MOV and AOV programs are established to ensure these valves remain operable under design basis conditions.

2. Attachment 2, page 3 of 6; regarding key assumptions:

a. Both units operating at 100 percent power; is this consistent with licensing basis (i.e., 102 percent is typical of most plants)?

Response:

Reactor power is not a direct input for CFC performance and its effect on containment accident conditions are determined in the accident analysis of record (PBNP FSAR section 14.3.4). The heat sources for this analysis are listed in FSAR Table 14.3.4-2, and include core power generation due to both fission and decay heat during the blowdown phase of the event. These are minor contributors during the initial blowdown and are highly dependant upon the size of the break assumed. It should also be noted that these integrated energy contributions are based on the assumption that "the decay heat is based on power operation for an infinite time".

Review of the underlying calculations (WCAP-8327 and WCAP-8326), along with a more recent revision (Westinghouse correspondence WEP-97-522 dated May 29,1997: "Containment Analysis Assuming Reduced Fan Cooler Performance") indicates that 100% core thermal power was used in establishing these heat sources. PBNP is a pre-SRP plant, and the use of 100% power in these analyses has previously been reviewed and accepted by the AEC and NRC.

The CFC performance analysis uses the analysis of record for the containment accident pressure and temperature response as an input. The two input parameters of significance are the temperature (286 deg F with superheat, 280 deg. F saturated steam) and pressure (60 psig).

b. The large-break loss-of-coolant accident (LOCA) is identified as the limiting event. This is not an assumption but rather, a statement of fact. Clarification is needed.

Response:

PBNP concurs that the statement identifying the large break LOCA as the limiting event is not an assumption; it is a statement of fact as stated in FSAR 14.0. The analysis supporting this conclusion is contained in FSAR 14.3.2.

c. Manual action is taken for the recirculation phase to ensure that all non-essential loads are isolated prior to transferring from injection to recirculation. Identify any manual actions (if any) that are credited that have not previously been reviewed and approved by the NRC, including a time-line of when these actions must occur, and confirm that necessary actions are included in the appropriate plant procedures and that all areas are accessible for completing these actions.

Response:

No credit is taken in the SW analysis of the injection phase of an accident for manual repositioning of any SW valves. Credit is taken for manual repositioning of valves prior to entering the recirculation phase. There are two places in the plant Emergency Operating

Procedures (EOPs) where this manual action is taken. The applicable step is dependent on the plant configuration at the time of the accident.

If the plant is not operating under an LCO, the analysis assumes a single train failure. A single train failure will start only three SW Pumps. When only three pumps have started, EOP 0, "Reactor Trip or Safety Injection", requires isolation of all non-essential loads. In the current plant configuration, some isolation valves will not have received a signal to close because of the train failure. In this case, the procedure currently requires that all of these valves be closed or checked closed. Our response to question 1 provides further details regarding which flowpaths are being modified to receive isolation signals.

If a continuous SW ring header flowpath cannot be established or less than 6 SW pumps are operating, EOP 1.3, "Transfer to Recirculation", requires that the accident unit Turbine Hall SW supply, the SW to Radwaste Supply, and the SW to Water Treatment valves be closed. In the current plant configuration, some isolation valves will not have received a signal to close because the less than four of six logic permissive has not been satisfied. The modification to remove this permissive is currently in progress. The requirement to perform these isolations is not dependent on a train failure.

All EOP steps have been reviewed and approved in accordance with the requirements of 10 CFR 50.59.

d. SW is not needed to supply AFW for the design-basis LOCA. Similar to (b) above, this is not an assumption but rather, a statement of fact. Clarification is needed.

Response:

In response to a design basis accident (LOCA), SW is not required for feeding the accident unit's steam generators since heat removal will be from SI, CFCs, containment spray and sump recirculation cooling. This is supported by the analysis presented in the updated FSAR. However, during the design basis LOCA, the non-accident unit may be at hot shutdown and require AFW. Due to the relatively short time frame in which the two Condensate Storage Tanks (CST) could be depleted (i.e., approximately 2 hours of AFW feed at 200 gpm), SW supply to the AFW pumps for feeding the non-accident unit must be accounted for.

While not explicitly accounted for, our analysis indicates that this flow would be available without affecting the flow model provided that certain SW flushing activities are secured before lining up SW to the suction of any AFW pump. (SW flushing is an infrequent activity performed to prevent sediment buildup in the SW lines.)

The following plant operating procedures that require flushing have been evaluated to assure that they direct that flushing be secured, as required by analysis, prior to aligning SW as the suction source to an AFW pump.

PC 43 Part 5, "Service Water to Auxiliary Feedwater Pump Line Flush", revision 6, issued March 27, 1999, step 4.1 assigns a level 3 dedicated operator to secure flushing prior to aligning SW to an AFW pump suction for feeding a Steam Generator.

OI 70, "Service Water System Operation", revision 25 currently in review, scheduled to be issued in May, 2000 will include a new precaution and limitation to secure SW flushing prior to aligning SW as the suction source to any AFW pump for feeding a Steam Generator.

While SW is not needed to supply AFW to the accident unit for the design basis LOCA, SW flow calculations are planned to be revised to explicitly account for the use of SW as an AFW pump suction source for the non-accident Unit.

3. **Attachment 2, page 4 of 6; assumption no. 2 states that any or all SW pump, valve, and header LCOs may be in effect at the same time subject to the limitations specified in the LCO. Describe any situations that will be permitted by the proposed Technical Specification limitations (individually and collectively) where the SW system will not be able to satisfy the minimum flow requirements for accident mitigation.**

   Response:

   Under the proposed Technical Specifications there will be no conditions permitted by the Technical Specifications that will result in the SW system not being capable of providing the minimum flow requirements for accident mitigation and concurrent safe operation or shutdown of the opposite unit as may be required. The proposed changes to the Technical Specifications are for the express purpose of ensuring that the design features of automatic isolation are not circumvented by permitting redundant valves to be simultaneously rendered inoperable.

4. **Attachment 2, page 4 of 6; the evaluation results indicate that boiling will not occur under steady-state conditions in the containment fan coolers. Confirm that the analysis that was performed to address GL 96-06 remains valid given the proposed TS requirements.**

   Response:

   The PBNP response to GL 96-06, specifically that the CFCs will remove a minimum of 37.5E6 Btu/Hr without raising the exit temperature of the SW to the boiling point under steady state conditions remains valid under the proposed Technical Specifications.

   The possibility of some flashing and two phase flow at the downstream throttle valves remains, but as previously stated (also in response to GL 96-06), this minor flashing has been demonstrated to not result in flow instabilities that would lead to a loss of the design basis heat removal capability.

5. **Attachment 2, page 4 of 6 (last paragraph), Attachment 2, page 5 of 6 (last paragraph), and Attachment 5, under TS 15.3.3.D-2.b.iii; additional explanation is needed as to what the evaluation process entails (e.g., bounding assumptions, acceptance criteria), and what actions plant operators will be allowed to take beyond those that have been reviewed and approved by the NRC. Confirm that the evaluation will satisfy the requirements of 10 CFR 50.65 in all**

respects, and that the evaluation includes provisions to assure that the SW model is valid for the specific situation being considered.

Response:

The evaluation process would follow the requirements of 10 CFR 50.59 to determine whether a proposed activity represented an Unreviewed Safety Question.

It is recognized by the facility that, while the proposed Technical Specifications will ensure safe operation under normal and permitted LCO conditions, circumstances may arise for which no explicit LCO exists and yet safe operation can be demonstrated. However, there may well be adequate margin available in the SW system to ensure safe operation with multiple pumps inoperable and the SW header split. Mitigating factors such as lake level higher than analyzed, cooler lake temperatures, and an imposition of restrictions on abnormal loads that are permitted by Technical Specifications (such as opening the CFC outlet MOVs on an operating unit) while the header is split.

The proposed change to permit an evaluation would allow the facility to weigh all factors affecting SW and supported systems' operability in determining whether the proposed activity is acceptable. The criteria for acceptability will be the assurance (by analysis, demonstrated capability based on current test performance, or a combination of both) that all required systems and components will remain fully capable of performing their design and license basis functions under the proposed conditions. That is, the supported equipment would remain operable under the existing conditions.

Bounding conditions and acceptance criteria would be as currently licensed for each component or system affected (e.g., for the CFCs, the ability to remove the design basis heat load under accident conditions without raising the exit temperature of the SW to boiling under steady state conditions; for the EDG coolers, to remove the heat load of a fully loaded EDG, etc.).

It is not expected that any credit could be taken for additional operator action in lieu of automatic actions.

While it is not anticipated that the evaluations resulting from the proposed change could be used to satisfy the provisions of 10 CFR 50.65 (Requirements for monitoring the effectiveness of maintenance at nuclear power plants; the "Maintenance Rule"), the proposed change would in no way conflict with or circumvent those provisions.

Assurance that evaluations performed would be valid (including SW hydraulic and thermodynamic modeling) is provided through the facility's 10 CFR 50.59 process.

6. **Attachment 5, TS 15.3.3.D-2.d does not provide an accurate representation of what is stated in the existing TS (i.e., the existing TS only allows this condition if at least five SW pumps are operable).**

Response:

TS 15.3.3.D-2.d in TSCR 206 Supplement 1, Attachment 5, contained a formatting error. The proposed Technical Specification was intended to be consistent with the current specification with the exception of an additional allowance for the containment fan cooler outlet MOVs to be open with three or four operable SW pumps, provided that an evaluation is performed to demonstrate the required systems are operable.
The existing Technical Specification 15.3.3.D-2.d reads as follows:

d. The containment fan cooler outlet motor operated valves may be open for up to 72 hours provided at least five service water pumps are operable. This LCO can be exited provided the valves are returned to the closed position or the flowpath is isolated.

The Technical Specifications page markups for proposed TS 15.3.3.D-2.d located in Attachment 5 inadvertently underlined the phrase, "At least five service water pumps are operable".

The Description of Change in Attachment 1, page 5 of 5, for the containment fan cooler outlet motor operated valves accurately represented the desired change as follows:

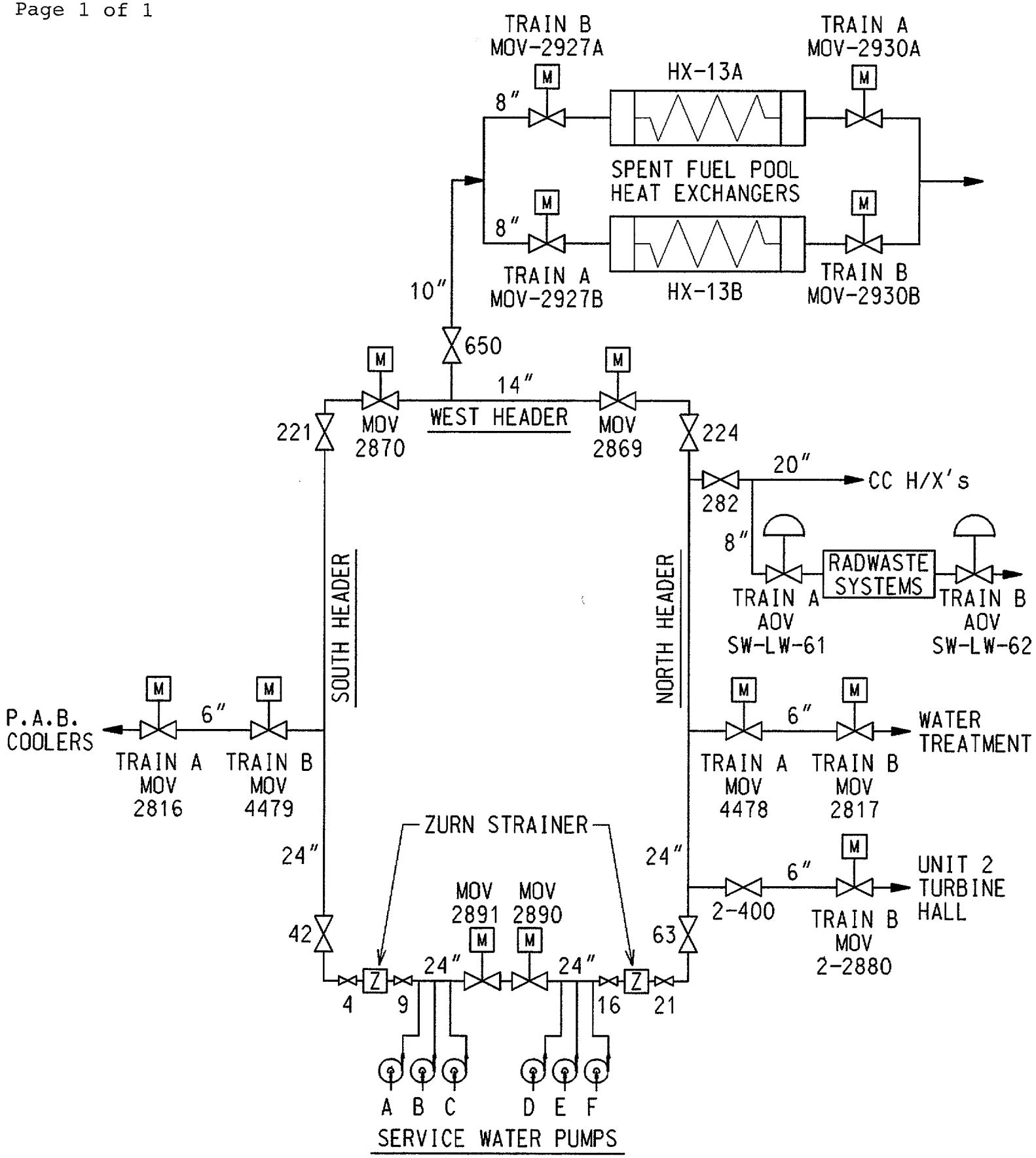
d. The containment fan cooler outlet motor operated valves may be open for up to 72 hours provided <u>that:</u>

   <u>i</u>. At least five service water pumps are operable.

   <u>Or</u>

   <u>ii</u>. <u>At least three service water pumps are operable provided an evaluation is performed demonstrating required systems are operable prior to establishing the configuration.</u>

   This LCO can be exited provided the valves are returned to the closed position or the flowpath is isolated.



SIMPLIFIED SERVICE WATER SYSTEM DIAGRAM SHOWING PUMPS, MAIN RING HEADER AND NON-ESSENTAIL ISOLATION VALVES

LISA.dgn