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10 CFR 50.4
10 CFR 50.90

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Gentlemen:

DOCKETS 50-266 AND 50-301
TECHNICAL SPECIFICATION CHANGE REQUEST 192
MODIFICATIONS TO TECHNICAL SPECIFICATIONS 15.3.3
"EMERGENCY CORE COOLING SYSTEM, AUXILIARY COOLING SYSTEMS,
AIR RECIRCULATION FAN COOLERS, AND CONTAINMENT SPRAY",
15.3.7 "AUXILIARY ELECTRICAL SYSTEMS" AND 15.5.2 "CONTAINMENT"
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

In accordance with the requirements of 10 CFR 50.4 and 50.90, Wisconsin Electric Power Company (Licensee) hereby requests 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 Technical Specifications. The proposed changes will modify Technical Specifications Section 15.3.3, "Emergency Core Cooling System, Auxiliary Cooling Systems, Air Recirculation Fan Coolers, and Containment Spray," to incorporate allowed outage times similar to those contained in NUREG-1431, Revision 1, "Westinghouse Owner's Group Improved Standard Technical Specifications," and modify the operability requirements for the service water system. The proposed changes to Technical Specifications Section 15.3.7, "Auxiliary Electrical Systems," also reflect the modified service water operability requirements. A description of the proposed changes, a safety evaluation, an assessment of no significant hazards, and edited Technical Specifications pages are provided as attachments to this letter.

DESCRIPTION OF CURRENT LICENSE CONDITION

Technical Specifications Section 15.3.3, "Emergency Core Cooling System, Auxiliary Cooling Systems, Air Recirculation Fan Coolers, and Containment Spray," defines the limiting conditions for operation that are necessary to remove decay heat from the core in normal or emergency situations, remove heat from the containment in normal and emergency situations, and remove airborne iodine from the containment atmosphere following a postulated design basis accident.

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Technical Specifications Section 15.3.7, "Auxiliary Electrical Systems," defines those conditions of electrical power availability necessary to provide for safe reactor operation and provide for the continuing availability of engineered safeguards.

Technical Specifications Section 15.5.2, "Containment," defines the significant design features of the reactor containment structure.

We have determined that the proposed amendments do not involve a significant hazards consideration, authorize a significant change in the types or total amounts of effluent release, or result in any significant increase in individual or cumulative occupational radiation exposure. Therefore, we conclude that the proposed amendments meet the categorical exclusion requirements of 10 CFR 51.22(c)(9) and that an environmental impact appraisal need not be prepared.

Please contact us if you have any questions.

Sincerely,

Bob Link
Vice President
Nuclear Power

CAC

cc: NRC Resident Inspector
NRC Regional Administrator
PSCW

Subscribed and sworn to before me on
this 30th day of September, 1996.

Jacqueline Gorecki
Notary Public, State of Wisconsin

My commission expires 10/27/96.

ATTACHMENT 1

TECHNICAL SPECIFICATION CHANGE REQUEST 192
DESCRIPTION OF PROPOSED CHANGES

This Technical Specification Change Request proposes to modify TS 15.3.3 by incorporating allowed outage times (AOTs) similar to those contained in NUREG-1431, Revision 1. This change request also proposes to clarify the operability requirements and limiting conditions for operation for the service water system, change the design specification for the containment fan coolers in TS 15.5.2 and change the requirements for normal and emergency power in TS 15.3.7. The proposed changes are as follows:

1. Change TS 15.3.3.B.2 to state that only ONE (capitalization and underlining added for emphasis) of the limitations may be in effect, rather than stating that only one of the following components can be inoperable. This is necessary because of the proposed change to the containment fan cooler LCO allows more than one containment fan cooler unit to be inoperable.

2. Change TS 15.3.3.B.2.a. to state, "One or two accident fan coolers may be out of service provided the fan coolers are restored to operable status within 72 hours. The remaining accident fan coolers shall be operable."

   Currently, Technical Specifications require four containment fan coolers (CFCs) to be operable and allow one CFC to be inoperable for 48 hours. Prior to 1982, the Technical Specifications required three fan coolers to be operable and allowed one of the three required to be inoperable for 48 hours. By letter dated February 10, 1982, the NRC requested that the Technical Specifications for CFC operability be changed to require four fan coolers to be operable. This request was based on recognition that loss of one train of safety equipment could leave less than the necessary number of containment fan coolers operable for accident mitigation. The Technical Specifications were changed via Amendments 60 and 65 to DPR-24 and DPR-27.

   The Westinghouse Standard Technical Specifications (NUREG-1431) allow one train of containment cooling to be inoperable for 72 hours. The proposed allowed outage times are based on a "component inoperability" format, which is consistent with the current PBNP Technical Specifications format. Conversion of the Standard Technical Specifications (STS) LCO to component inoperability format leads to the proposed LCO allowed outage time of 72 hours for one or two fan coolers, because this is consistent with the time limit imposed for inoperability of one train of the containment cooling system.

   As stated previously, the original Technical Specifications for PBNP allowed one CFC to be inoperable indefinitely without limitation. The change requested by the NRC in the

February 10, 1982, letter appropriately identified the situation that an LCO should apply when any one fan cooler is inoperable, but not changing the other requirements of the containment cooling LCO, which allow only one CFC to be inoperable for 48 hours, inadvertently resulted in the current Technical Specifications being much more limiting than STS. The proposed Technical Specifications for containment cooling rectify this situation and provide appropriate LCOs and allowed outage times for containment cooling component inoperability.

The requirement that the other accident fan coolers shall be operable before initiating maintenance on any inoperable fan cooler is being changed to delete the clause that specifies "before initiating maintenance on any inoperable fan cooler." This clause is being removed to provide consistency with the other limiting conditions for operation and because it is unnecessary. The proposed more general statement covers all conditions, not just "before initiating maintenance."

3. Change TS 15.3.3.B.2.b to delete the clause that specifies "before initiating maintenance on any inoperable pump." This clause is being removed to provide consistency with the other limiting conditions for operation and because it is unnecessary. The proposed more general statement covers all conditions, not just "before initiating maintenance."

4. Change TS 15.3.3.D.1.a to state that six service water pumps are required to be operable and delete the requirement that states, "two from each train." The existing Technical Specifications require four service water pumps to be operable. When one of the four required pumps is inoperable, an LCO with a 24-hour allowed outage time is applied. Based on recent analyses that show three service water pumps are needed for accident mitigation, the proposed Technical Specifications requirement for service water pump operability changes the number of required service water pumps from four to six. The six service water pump operability requirement maintains appropriate redundancy for the service water pumps.

5. Change TS 15.3.3.D.2 to replace the statement to allow one of the following components to be inoperable at any one time with a the statement to allow any of the conditions to be in effect coincidentally. Also, change the action statement to require the affected reactor(s) to be shutdown rather than both units. These limiting conditions for operation are more accurately described as "conditions" instead of "inoperable components" because multiple components may be inoperable and all the LCOs are no longer being based on single component inoperability. The change that allows multiple conditions to be in effect at any one time has been established based on placing the appropriate conditions in each LCO. The provision to require that only the affected reactor(s) be shutdown is based on the recognition that accident mitigation capability in only one unit may be affected. For example, when the containment fan cooler outlet valves are in the open position, the limiting condition for operation would only be applicable to one unit as described in the basis to these Technical Specifications.

6. Change TS 15.3.3.D.2.a to state, "One of the six required service water pumps may be out of service provided a pump is restored to operable status within 7 days. A second service water pump may be out of service provided a pump is restored to operable status within 72 hours. A third service water pump may be out of service provided two pumps are restored to operable status within 72 hours."

The Westinghouse Standard Technical Specifications (NUREG-1431) allow one train of service water to be inoperable for 72 hours. The proposed allowed outage times are based on a "component inoperability" format, which is consistent with the current PBNP Technical Specifications format. Conversion of the Standard Technical Specifications (STS) LCO to component inoperability format leads to the proposed LCO allowed outage times of 72 hours for two or three service water pumps, because this is consistent with the time limit imposed for the inoperability of one train of service water or half of the system.

The allowed outage time associated with one service water pump being inoperable, 7 days, is based on the fact that with five remaining service water pumps being operable, substantial redundancy is still available. This is a safer condition than two or three service water pumps being inoperable, and hence a longer allowed outage time should be applied. The 7-day allowed outage time is based on the redundancy associated with three service water pumps needed for accident mitigation and five operable service water pumps available. Additionally, the 7-day allowed outage time for one service water pump provides sufficient repair time for a major malfunction of one pump.

7. Change TS 15.3.3.D.2.b to state that the service water ring header continuous flowpath may be out of service for up to 7 days and include the provision that if less than four service water pumps are operable, service water system flow shall be evaluated within 24 hours of entry into this LCO. This LCO replaces the loop header LCO that was added to the PBNP Technical Specifications as result of a Technical Specifications Change Request that was submitted to the U.S. Atomic Energy Commission, via letter dated June 21, 1972. The current LCO fails to account for the following:

> The LCOs for the equipment rendered inoperable by the header inoperability would be applied until the affected equipment is switched to another supply header. Accident mitigating capability is maintained when the equipment is switched to another supply header. Approximate repair time for a header is 7 days, based on cutting and welding repairs. There are actually three loop headers at PBNP, designated "north," "south," and "west."

The current LCO has three inconsistencies:

1. The LCO states one of two loop headers may be out of service. This is inconsistent with the actual configuration of three headers (see FSAR Figure 9.6-4).

2. The inoperability of one of the two loop headers would require the shutdown of both units. The shutdown of both units is not necessary because sufficient equipment can be maintained to continue to operate one unit with either the north or south header out of service.
3. This LCO is inconsistent with applicable LCOs for equipment supplied by the header. For example, a header, which is allowed to be out of service for 24 hours, supplies two containment fan coolers. Two containment fan coolers are not allowed to be inoperable under the existing Technical Specifications. (Note that the proposed containment fan cooler LCO allows 2 accident fan cooler units to be inoperable for 72 hours).

The proposed continuous flowpath LCO requirement would be applied anytime continuity of the flowpath in the service water ring header is interrupted. This includes isolation of any header or headers in the system. This LCO recognizes that one aspect of redundancy in the service water system is the ability to isolate a break in the system and still maintain ability to provide required flow to supported equipment. This capability is impaired anytime the continuous flowpath of the ring header is blocked. The 7-day allowed outage time is based on the fact that a piping failure must occur to cause a subsequent problem with system operability. Piping failures are not considered as the single failure for system functionality during an accident.

The two main service water headers being referred to by the Technical Specification are designated "north" and "south." The south header predominantly serves Unit 1 components. The north header predominantly serves Unit 2 Components. All shared safety features necessary for operation can be supplied by either of these two main headers (see attached table titled, "Technical Specifications Equipment Supported by Service Water"). If a header must be isolated, the equipment that is switched to the other header will be maintained operable.

For example, if the north header must be removed from service, all required equipment that is switched to the south header would remain operable. LCOs for the remaining equipment would be entered. Unit 2 would be in an LCO for two containment fan coolers which under the proposed Technical Specifications would be a 72-hour LCO for Unit 2. (It should be noted that two containment fan cooler units inoperable under any current Technical Specifications LCO and therefore this condition would require entry into Technical Specification 15.3.0). Unit 1 would be subject to the 7-day allowed outage time for the loss of continuity of the service water ring header continuous flowpath. The 7-day allowed outage time is based on approximate repair time for a header and the possibility that a mechanical failure in the south header would result in a loss of service water system function.

The additional provision that service water system flow shall be evaluated within 24 hours if the ring header continuous flowpath is out of service and less than four service water pumps are operable will establish the requirement to determine equipment supported by

service water is operable in this configuration. If it is determined that any equipment will not receive sufficient flow, the applicable LCOs for the affected equipment shall be entered. These LCOs can be exited if system realignment is completed to achieve the required flow rates for the affected equipment. For a planned entry into this condition, the evaluation and the appropriate realignment of the system would be completed prior to entry into this condition.

8. Change TS 15.3.3.D.2.c to include more specific identification of the "valve" as an automatic isolation valve required during accident conditions and delete the reference to "other passive component." This provides more direct relationship of this LCO to the associated operability requirement contained in TS 15.3.3.D.1.b which also specifies that it pertains to equipment required during accident conditions. The reference "other passive component" is not necessary because piping and heat exchanger failures in the system would be covered under the requirements in TS 15.3.3.D.2.b for the ring header continuous flowpath, the applicable LCO for the affected equipment, or both. The additional provision that requires at least four service water pumps to be operable incorporates the appropriate restriction to allow coincidental entry into any of these service water system LCOs, as stated in the description of change to TS 15.3.3.D.2.

   Also, it is proposed that TS 15.3.3.D.2.c be changed to increase the allowed outage time from 48 to 72 hours which is consistent with the relaxation of single failure and allowed outage time associated with a loss of redundancy for the service water system. The two ways this LCO can be exited have been added to this LCO for clarity. The two ways this LCO can be exited include isolating the line with a seismically qualified isolation valve or restoring the valve to operable status.

9. Insert new specification, 15.3.3.D.2.d, to allow the containment fan cooler outlet motor operated valves to be open provided they are returned to the closed position within 72 hours. The containment fan cooler service water outlet motor operated valves consist of two fully redundant valves that are automatically opened in response to a safety injection signal. Either valve is capable of passing the full flow required for all four fan cooler units in accident mode. At various times, these valves are opened to allow testing of the containment fan coolers or adjustment of the system flow rates. If one or both of these motor operated valves are open in a unit, there may be insufficient service water flow if an accident occurs in the other unit and a single failure occurs. Therefore, in this case, the other unit is in a limiting condition for operation because relaxation of single failure is necessary. That unit would be considered the "affected unit" and hence the valves must be closed within 72 hours or the affected unit must be shutdown. If the valves are open in both units, they would both be considered "affected" until such time that the motor operated valves were closed for a unit, at which time the affected unit would be the unit with the closed valves.

The 72-hour allowed time is consistent with the relaxation of single failure and allowed outage time associated with a loss of redundancy for the service water system. For the case of single unit operation, the valves for the operating unit may be open without limitation if the valves for the shutdown unit are in the shut position or the flowpath is isolated.

The additional provision that requires at least four service water pumps to be operable incorporates the appropriate restriction to allow coincidental entry into any of these service water system LCOs, as stated in the description of change to TS 15.3.3.D.2.

The two ways that this LCO can be exited have been added to this LCO for clarity. The two ways this LCO can be exited include isolating the flowpath or returning the valves to the closed position.

10. The Basis of Technical Specifications Section 15.3.3 is being changed to include supporting information for each of the previously described changes.

11. Change TS 15.3.7.A.1.i to state that this specification applies to one or both units rather than just both units. This specification in combination with the following two specifications (j. and k.) provides the requirements for normal and emergency power operability for one or both reactors to be made critical. Based on the service water pump power supply configuration and the condition that four pumps were required to be operable, therefore the normal and emergency power for the Unit 1 A06/B04 and Unit 2 A05/B03 buses were only required for the associated unit to be made critical. As stated in change 3 (above), six service water pumps are now considered necessary for operation of one or both units. Therefore, the Unit 1 A06/B04 and Unit 2 A05/B03 buses are now considered necessary for operation of one or both units.

12. Change TS 15.3.7.A.1.j to delete this LCO. This specification provides the requirement for normal and emergency power operability for Unit 1 to be made critical. The change to TS 15.3.7.A.1.i eliminates the need for this specification.

13. Change TS 15.3.7.A.1.k to delete this LCO. This specification provides the requirement for normal and emergency power operability for Unit 2 to be made critical. The change to TS 15.3.7.A.1.i eliminates the need for this specification.

14. Change TS 15.3.7.B.1.g to require that the action statement apply to both units rather than the affected unit or units. This specification provides the allowed outage time and action statement for Unit 1 A06/B04 or Unit 2 A05/B03 or both being out of service. As stated previously, these buses are now each considered necessary for operation of both units. Therefore, the proposed change will establish that the action statement be applied appropriately to both units.

15. Change TS 15.5.2 to reduce the total heat removal capability of the four ventilation fans and air coolers from 55,600 Btu/sec to 41,700 Btu/sec. This specification states the capability requirement for containment cooler heat removal rate. The capability requirement is being reduced by 25% based on the results of evaluations that show 25% reduction in heat removal capability is sufficient for accident mitigation.

ATTACHMENT 2

TECHNICAL SPECIFICATION CHANGE REQUEST 192

SAFETY EVALUATION

INTRODUCTION

Wisconsin Electric Power Company (Licensee) is applying for amendments to Facility Operating License DPR-24 and DPR-27 for Point Beach Nuclear Plant, Units 1 and 2. The requested amendments propose changes to Technical Specifications (TS) 15.3.3, "Emergency Core Cooling System, Auxiliary Cooling Systems, Air Recirculation Fan Coolers, and Containment Spray," and its associated bases, to incorporate allowed outage times similar to those contained in NUREG-1431, Revision 1, "Westinghouse Owner's Group Improved Standard Technical Specifications," and modify the operability requirements for the service water system. This change request also proposes to clarify the operability requirements for the service water system, change the design specification for the containment fan coolers in TS 15.5.2 and change the requirements for normal and emergency power in TS 15.3.7.

In 1991, Wisconsin Electric personnel evaluating the service water system capability discovered that the Technical Specifications were not consistent with the Technical Specifications Bases and the Final Safety Analysis Report (FSAR) requirements for the service water (SW) system. The fundamental inconsistency was based on the fact that the Technical Specifications (TS 15.3.3.D) only require 4 SW pumps to be operable, but that the TS Basis for TS 15.3.3 and the FSAR Chapters 6 and 9 stated that 3 SW pumps were needed to mitigate an accident in one unit and provide cooling for the other unit. It was concluded that some failures that are typically considered for the purposes of meeting single-active failure requirements, would leave less than three SW pumps operational, post-accident. For example, if the four required SW pumps are being powered two from Train A and two from Train B, the loss of offsite power and the failure of one train of emergency power in an accident would leave only two operational SW pumps.

This discovery was resolved by showing that two SW pumps were sufficient for accident response and by revising the FSAR and TS basis accordingly. Technical Specification Change Request 169 dated September 12, 1994 provided the justification for the Technical Specification changes. The Safety Evaluation for TS Change Request 169 states, "Additional changes to the service water system specification and basis address train specific power for the service water pumps. Of the six service water pumps, three are powered from each train. The proposed clarification is that, of the four service water pumps required to be operable, two must be powered from each train. The basis which now states that three service water pumps are required during the injection and recirculation phases of an accident is being changed to clarify that two service water pumps are required. Calculation N-90-006, Revision 1, has been performed which demonstrates that two service water pumps are adequate to supply accident loads in one unit and hot shutdown/normal operation loads in the other unit."

It should be noted that this situation of PBNP Technical Specifications that do not conform with current application of single-failure criterion is not unique within the PBNP Technical Specifications. As stated in the description of changes for this Technical Specifications Change Request, the original Technical Specifications for PBNP required only three containment fan coolers (CFC) to be operable for a u[illegible] Similar to the SW situation described above, a train failure could leave a unit with only [illegible]erational CFC, post-accident. This was discovered by the NRC in February 1982 and th[illegible]uired that the Technical Specifications be changed to require four CFCs to be operable [illegible] February 10, 1982).

It has been concluded, based on review of the PBNP FSAR, that the minimum Technical Specifications requirement in the original Technical Specifications was established for this equipment by adding one to the minimum amount of equipment required to operate post-accident. Thus, if one component should fail, sufficient components would remain operable for accident mitigation. The two main examples of this logic being applied without sufficient discrimination (and consideration for more limiting single failures) were the service water pumps and containment fan cooler units. As an additional example, the original auxiliary feedwater Technical Specification (TS 15.3.4) required that three of four pumps be operable for two unit operation. Subsequently, this specification was changed to require all four pumps to be operable (ca 1982).

Additional discoveries have been made that identify concerns with SW system capability. The viability of two pumps providing sufficient SW flow for accident mitigation has been challenged. It has been shown by calculation that three pumps are necessary. As an interim corrective action, an administrative restriction was established that requires all six SW pumps to be operable for two unit operation. The administrative restriction further establishes time limits that power operation can continue if one or more SW pumps are inoperable. This administrative restriction effectively establishes the requirements for SW pump operability to ensure that three SW pumps will be operational for accident mitigation.

The plan for reconciliation of the inconsistencies between the Technical Specifications and the design basis for the SW system was originally directed at proving that two service water pumps will provide sufficient flow for accident mitigation. Subsequent discussions with the NRC have prompted the parallel effort of preparing this Technical Specifications Change Request which incorporates the six service water pump operability requirement. In a letter to the NRC dated July 23, 1996, Wisconsin Electric committed to provide a Technical Specifications Change Request by September 30, 1996, that proposes appropriate limits on service water system operation for ensuring the system will perform its design basis function. The Technical Specifications proposed in this Technical Specifications Change Request provide appropriate containment cooling and service water limiting conditions for operation and allowed outage time requirements.

The basic philosophy of limiting conditions for operation is stated in the "General Considerations" section of the PBNP Technical Specifications. Technical Specification 15.3.0.A states, "Many of the Limiting Conditions for Operation (LCO) presented in these specifications provide a temporary relaxation of the single failure criterion, which is consistent with overall

reliability considerations, to allow time periods during which corrective action may be taken to restore the system to full operability." This basic philosophy was used in the development of these proposed Technical Specifications. Additionally, NUREG-1431, Standard Technical Specifications, Westinghouse Plants, was used as a reference for standard LCO and allowed outage time requirements.

EVALUATION

The proposed Technical Specifications changes pertain to the containment cooling and service water systems. These systems are described in the PBNP FSAR. The containment fan coolers provide normal cooling and post-accident cooling of the containment atmosphere. The service water system supports a host of Technical Specifications equipment, including the containment fan coolers. The following detailed evaluations of each system include the applicable and associated general design criteria, system descriptions, and evaluation of the proposed limiting conditions for operation.

CONTAINMENT AIR RECIRCULATION COOLING SYSTEM

The engineered safety features (ESF) for PBNP are described in Chapter 6 of the PBNP FSAR. The containment air recirculation cooling system is considered an ESF for PBNP and it is described in §6.3 of the PBNP FSAR.

Applicable General Design Criteria

The general design criteria as contained in the PBNP FSAR that apply to the containment air recirculation cooling system are as follows:

GDC 49 The reactor containment structure, including openings and penetrations, and any necessary containment heat removal systems, shall be designed so that the leakage of radioactive materials from the containment structure under conditions of pressure and temperature resulting from the largest credible energy release following a loss-of-coolant accident, including the calculated energy from metal-water or other chemical reactions that could occur as a consequence of failure of any single active component in the emergency core cooling system, will not result in undue risk to the health and safety of the public.

GDC 37 Engineered safety features shall be provided in the facility to back up the safety provided by the core design, the reactor coolant pressure boundary, and their protection systems. Such engineered safety features shall be designed to cope with any size reactor coolant piping break up to and including the equivalent of a circumferential rupture of any pipe in that boundary, assuming unobstructed discharge from both ends.

GDC 38 All engineered safety features shall be designed to provide such functional reliability and ready testability as is necessary to avoid undue risk to the health and safety of the public.

GDC 40 Adequate protection for those engineered safety features, the failure of which could cause an undue risk to the health and safety of the public, shall be provided against dynamic effects and missiles that might result from plant equipment failures.

GDC 41 Engineered safety features, such as the emergency core cooling system and the containment heat removal system, shall provide sufficient performance capability to accommodate the failure of any single active component without resulting in undue risk to the health and safety of the public.

GDC 42 Engineered safety features shall be designed so that the capability of these features to perform their required function is not impaired by the effects of a loss-of-coolant accident to the extent of causing undue risk to the health and safety of the public.

GDC 4 Reactor facilities may share systems or components if it can be shown that such sharing will not result in undue risk to the health and safety of the public.

GDC 52 Where an active heat removal system is needed under accident conditions to prevent exceeding containment design pressure, this system shall perform its required function, assuming failure of any single active component.

GDC 58 Design provisions shall be made to the extent practical to facilitate the periodic physical inspection of all important components of the containment pressure-reducing systems, such as pumps, valves, spray nozzles, torus, and sumps.

GDC 59 The containment pressure-reducing systems shall be designed to the extent practical so that components, such as pumps and valves, can be tested periodically for operability and required functional performance.

GDC 61 A capability shall be provided to test initially under conditions as close as practical to the design and the full operational sequence that would bring the containment pressure-reducing systems into action, including the transfer to alternate power sources.

Associated General Design Criteria

GDC 2 Those systems and components of reactor facilities which are essential to the prevention or to the mitigation of the consequences of nuclear accidents which could cause undue risk to the health and safety of the public shall be designed, fabricated, and erected to performance standards that will enable such systems and components to withstand, without undue risk to the health and safety of the public the forces that might reasonably be imposed by the occurrence of an extraordinary natural

phenomenon such as earthquake, tornado, flooding condition, high wind or heavy ice. The design bases so established shall reflect: (a) appropriate consideration of the most severe of these natural phenomena that have been officially recorded for the site and the surrounding area; and (b) appropriate margin for withstanding forces greater than those recorded to reflect uncertainties about the historical data and their suitability as a basis for design.

GDC 39 An emergency power source shall be provided and designed with adequate independency, redundancy, capacity, and testability to permit the functioning of the engineered safety features and protection systems required to avoid undue risk to the health and safety of the public. This power source shall provide this capacity assuming a failure of a single active component.

System Description

The PBNP FSAR provides substantial description of the system design and operation for the containment air recirculation system. As stated previously, the containment air recirculation system provides normal containment cooling and cooling of the containment for design basis accident mitigation. The requirement for containment cooling for design basis accident mitigation is the system function that the Technical Specifications are intended to preserve for containment air recirculation system. The accident mitigation containment cooling function is the predominant requirement of the GDCs listed previously as applicable to the containment air recirculation cooling system.

The nominal performance parameters as described in FSAR §6.3 for the containment fan coolers are summarized as follows:

Design Heat Removal rate................50×10^6 BTU/hr @ 286°F saturated steam-air mixture

Flow Rate.......................... ....38,500 cfm

Water Flow Rate..............................1000 gpm

Water Temperature............................70°F

Fouling Factor...................................0.001

The FSAR also states that the design basis heat removal rate of 100×10^6 BTU/hr for a train of containment coolers can be achieved with varying combinations of SW temperature, flowrate, and fouling factor.

The heat removal capability of the containment fan coolers is also described in FSAR §14.3.4, "Containment Integrity Evaluation." Figure 14.3.4-1 provides the analysis input pertaining to containment air recirculation fan-cooler heat removal rate as a function of containment

atmosphere pressure. The FSAR §14.3.4 containment integrity analysis is based on operation of two containment fan coolers and one containment spray pump. FSAR Figures 14.3.4-2, 14.3.4-6, 14.3.4-7 and 14.3.4-8 show the containment pressure response for various cases analyzed.

Evaluations have been completed in which the containment fan cooler heat removal rate is reduced by 25% and containment spray is secured one hour after the LOCA occurs. The results of these evaluations are provided as Attachment 3 to this Technical Specifications Change Request. The results of these evaluations show that maximum predicted containment pressure is not increased. This is due to the fact that the maximum pressure is reached before the containment air recirculation system and the containment spray system are assumed to operate.

The FSAR §6.3 and the basis of Technical Specifications §15.3.3 state that any combination of the following equipment will provide sufficient heat removal capacity to maintain the post-accident containment pressure below the design value, assuming that the core residual heat is released to the containment as steam: (1) all four containment cooling units, (2) both containment spray pumps, and (3) two of the four containment cooling units and one containment spray pump. This was based on the equivalency of heat removal via these various combinations of equipment. The FSAR does not contain any specific analysis of these combinations. Only the third combination is analyzed with the results contained in the FSAR §14.3.4. The results of the recent evaluations using the reduced containment fan cooler heat removal capability is provided as Attachment 3 to this Technical Specifications Change Request (as stated previously). It should be noted that this equivalency statement is being removed from the Technical Specifications basis because it does not directly support any of the operability requirements or LCOs for the containment cooling systems.

Proposed Limiting Conditions for Operation

The proposed LCO for the containment fan cooler units states:

> One or two accident fan coolers may be out of service provided the fan coolers are restored to operable status within 72 hours. The remaining accident fan coolers shall be operable.

The current LCO for containment fan coolers allows one accident fan cooler unit to be out of service provided that cooler is returned to operable status within 48 hours. The proposed LCO is fundamentally based on the guidance contained in NUREG-1431, Revision 1, "Standard Technical Specifications Westinghouse Plants." The Westinghouse Standard Technical Specifications (NUREG-1431) allow one train of containment cooling to be inoperable for 72 hours. The proposed allowed outage times are based on a "component inoperability" format, which is consistent with the current PBNP Technical Specifications format. Conversion of the Standard Technical Specifications (STS) LCO to component inoperability format leads to the proposed LCO allowed outage times of 72 hours for one or two fan coolers, because this is consistent with the time limit imposed for the inoperability of one train or half the capacity of the containment cooling system.

As stated previously, the original Technical Specifications for PBNP allowed one CFC to be inoperable indefinitely without limitation. The change requested by the NRC in the February 10, 1982, letter appropriately identified the situation that an LCO should apply when any one fan cooler is inoperable, but not changing the other requirements of the containment cooling LCO, which allow only one CFC to be inoperable for 48 hours, inadvertently resulted in the current Technical Specifications being much more limiting than STS. The proposed Technical Specifications for containment cooling rectify this situation and provide appropriate LCOs and allowed outage times for containment cooling component inoperability.

The proposed Technical Specifications requirements deviate from the STS by not including the use of "Train" designations for the LCO. Therefore, the proposed LCO contains an allowed outage time of 72 hours for coincidental degradation of both trains of containment cooling with two containment fan coolers out of service, one from each train. This difference is justified based on the recognition that the allowed outage time is consistent with the PBNP Technical Specifications LCO general consideration which states, "Many of the Limiting Conditions for Operation presented in these specifications provide a temporary relaxation of the single failure criterion, which is consistent with overall reliability considerations, to allow time periods during which corrective action may be taken to restore the system to full operability." In this case, the relaxation of single failure criterion would leave sufficient containment fan coolers operable for accident mitigation (i.e. two containment fan coolers).

Additionally, the service water supply piping configuration to the containment fan coolers is such that the heat exchangers are paired as follows: HX-15A and HX-15C; HX-15B and HX-15D. The accident fans and power supplies associated with the heat exchangers are arranged as follows:

Heat Exchanger	Fan	Power Supply
HX-15A	W-1A1	Train A
HX-15B	W-1B1	Train A
HX-15C	W-1C1	Train B
HX-15D	W-1D1	Train B

This leads to the possibility that a service water system repair may cause one fan cooler in each train to be considered inoperable. The proposed LCO for containment fan coolers provides appropriate limitation to allow this type of repair.

SERVICE WATER SYSTEM

The auxiliary and emergency systems for PBNP are described in Chapter 9 of the PBNP FSAR. The service water system is considered a facility service system for PBNP and it is described in §9.6.2 of the PBNP FSAR.

Applicable General Design Criteria

GDC 4 Reactor facilities may share systems or components if it can be shown that such sharing will not result in undue risk to the health and safety of the public.

GDC 41 Engineered safety features, such as the emergency core cooling system and the containment heat removal system, shall provide sufficient performance capability to accommodate the failure of any single active component without resulting in undue risk to the health and safety of the public.

GDC 52 Where an active heat removal system is needed under accident conditions to prevent exceeding containment design pressure, this system shall perform its required function, assuming failure of any single active component.

Associated General Design Criteria

GDC 2 Those systems and components of reactor facilities which are essential to the prevention or to the mitigation of the consequences of nuclear accidents which could cause undue risk to the health and safety of the public shall be designed, fabricated, and erected to performance standards that will enable such systems and components to withstand, without undue risk to the health and safety of the public the forces that might reasonably be imposed by the occurrence of an extraordinary natural phenomenon such as earthquake, tornado, flooding condition, high wind or heavy ice. The design bases so established shall reflect: (a) appropriate consideration of the most severe of these natural phenomena that have been officially recorded for the site and the surrounding area; and (b) appropriate margin for withstanding forces greater than those recorded to reflect uncertainties about the historical data and their suitability as a basis for design.

GDC 39 An emergency power source shall be provided and designed with adequate independency, redundancy, capacity, and testability to permit the functioning of the engineered safety features and protection systems required to avoid undue risk to the health and safety of the public. This power source shall provide this capacity assuming a failure of a single active component.

System Description

The PBNP FSAR provides substantial description of the system design and operation for the service water system. The service water system has been designed to provide redundant cooling water supplies with isolation valves to the auxiliary feedwater pumps, bearing oil cooling, two diesel generators (G-01 and G-02), air compressors, component cooling heat exchangers, spent fuel pool cooling system and to the containment air recirculating cooling system. The service water system is shown diagramatically in FSAR Figures 9.6-4, -4A, -5, -6, -7, -8, and -9.

This system also supplies water for the fire protection sprinkler systems in the emergency diesel generator (G-01 and G-02) rooms and containment hose reels as described in FSAR §9.6.1. Various ventilation coolers and secondary plant components are also cooled by the service water system. The design includes provisions for automatic isolation of nonessential components following an accident. Lake Michigan is the source of service water.

Although not specifically identified in the PBNP FSAR Chapter 14 accident analyses, the service water system provides support for the Train A emergency diesel generators, auxiliary feedwater system, component cooling water system, and containment air recirculation cooling system for accident mitigation. The spent fuel pool cooling system, air compressors, and fire protection system are also supported by the service water system but these systems do not perform any accident mitigation function as described in the PBNP FSAR.

Proposed Limiting Conditions for Operation

The Basis section for Technical Specification 15.3.3 states that a total of six service water pumps are installed, only two of which are required to operate during the injection and recirculation phases of a postulated loss-of-coolant accident in one unit, together with a hot shutdown or normal operation condition in the other unit. For either reactor to be critical, four service water pumps must be operable. Two of the pumps must be powered from the 'A' Train, and the other two must be powered from the 'B' Train.

Recently, analyses have been completed that show three service water pumps are needed for accident mitigation. In order to establish appropriate limitations for the this situation, the following LCO has been proposed:

> One of the six required service water pumps may be out of service provided a pump is restored to operable status within 7 days. A second service water pump may be out of service provided a pump is restored to operable status within 72 hours. A third service water pump may be out of service provided two pumps are restored to operable status within 72 hours.

The proposed Technical Specifications requirements deviate from the STS by not including the use of "Train" designations for the LCO. As stated previously, the service water system is supplied by six service water pumps, with three pumps each powered by Train A and Train B buses. The service water system is shared between the two units at PBNP and the power supply arrangement is divided between the two units. The system has redundant capability through the use of alternate supplies to most of the required functions and the ability to isolate failed portions of the system. The basis for the allowed outage times is provided in the "Description of Changes" portion of this Technical Specification Change Request. The fundamental basis for the proposed LCO for service water pumps is that three service water pumps are needed for accident mitigation and the statement in the General Considerations section of the PBNP Technical Specifications which states, "Many of the Limiting Conditions for Operation (LCO) presented in these specifications provide a temporary relaxation of the single failure criterion, which is consistent

with overall reliability considerations, to allow time periods during which corrective action may be taken to restore the system to full operability." Additionally, the 7 day allowed outage time for one service water pump provides sufficient repair time for a major malfunction of one pump.

Additionally, the service water piping configuration is such that the pumps supply common parts of the ring header in groups of three as follows: Group 1 is P-032A, P-032B, and P-032C; Group 2 is P-032D, P-032E, and P-032F. The pump power supplies are arranged as follows:

Pump	Power Supply
P-032A	Train A
P-032B	Train A
P-032C	Train B
P-032D	Train B
P-032E	Train B
P-032F	Train A

This leads to the possibility that a service water system repair may cause two pumps in one train and one pump in another train to be considered inoperable. The proposed LCO for service water pumps provide appropriate limitation to allow this type of repair.

Additionally, the loop header LCO is being changed to require service water ring header continuous flowpath to be operable and the allowed outage time is being changed from 24 hours to 7 days. The current loop header LCO is inconsistent with other applicable LCOs for systems and components supported by service water. When a header is removed from service, all applicable LCOs will be entered until the SW system is aligned to restore operability to the affected equipment. The proposed LCO recognizes that one aspect of redundancy in the service water system is the ability to isolate a break in the system and still maintain ability to provide required flow to supported equipment. This capability is impaired anytime the continuous flowpath of the ring header is blocked. The 7-day allowed outage time is based on the fact that a piping failure must occur to cause a subsequent problem with system operability. Piping failures are not considered as the single failure for system functionality during an accident.

A new LCO for containment fan cooler service water outlet valves is being proposed as previously described. The new LCO for service water outlet valves is necessary for situations in which these valves need to be opened. This LCO provides appropriate allowed outage time for this condition, consistent with the allowed outage time for a loss of redundancy in the service water system.

The change to allow coincidental entry into one or all of the service water LCO conditions has been accounted for by including the requirement that at least four service water pumps are operable under the LCO conditions that would increase the service water system flow requirement. The additional flow required under the combination of these conditions is less than the capacity of a single service water pump. Therefore the requirement for at least four pumps to be operable under these conditions provides assurance that the required flows will be achieved.

The provision to require that only the affected reactor(s) be shutdown is based on the recognition that accident mitigation capability in only one unit may be affected, in particular when the containment fan cooler outlet valves in the open condition limiting condition for operation is only applicable to one unit as described in the basis to these Technical Specifications.

The requirement that three service water pumps operate for design basis LOCA mitigation also affects the normal and emergency power limiting conditions for operation contained in Technical Specifications §15.3.7. The service water system is a shared safety system at PBNP. The power supplies for the six service water pumps are divided with three service water pumps powered by each train, as follows: Two from Unit 1 A05, one from Unit 1 A06, one from Unit 2 A05, and two from Unit 2 A06. Previously, inoperability of normal or emergency power to either of the buses that power a single service water pump would not have required entry into an LCO for the other unit because at least two service water pumps still have normal and emergency power in each train.

The proposed LCO changes for normal and emergency power will establish the 7-day allowed outage time for normal or emergency power as applicable to both units for the buses that previously would only have required shutdown of the affected unit. Inoperability of normal or emergency power to either Unit 1 A06 or Unit 2 A05 buses would only affect one service water pump. The applicable LCO for Unit 1 A06 and Unit 2 A05 (TS 15.3.7.B.1.g) also allows normal or emergency power to be out of service to both of these buses. Inoperability of normal or emergency power to both Unit 1 A06 and Unit 2 A05 would affect two service water pumps. This is consistent with the current normal and emergency power LCOs that allow up to one train of service water (3 pumps) to be without normal or emergency power for 7 days. Therefore, the proposed emergency power LCOs for Unit 1 A06 and Unit 2 A05 establish appropriate guidance for the associated affect on the service water system for both buses with inoperable normal or emergency power.

In general, the proposed changes to the normal and emergency power LCOs are based on the recognition that inoperability of normal or emergency power for the Unit 1 A06 and Unit 2 A05 buses affects both units because of the service water pump power supply arrangement and the need to maintain all six service water pumps operable for single or dual unit operation.

METHODS OF ANALYSIS

Service Water System Flow Modeling

The current engineering analyses for determining flow rates in the service water system are based on the use of the WATER™ computer program. The WATER™ computer program was produced by Municipal Hydraulics Inc. This program simulates water distribution systems and predicts steady state flow in pipes. Validation of PBNP service water flow model by comparison of the computer program results with the actual plant data and specifications demonstrates that the WATER™ computer program can be used to accurately predict flows in the service water system.

Heat Transfer Modeling

The current engineering analyses for determining the containment cooler heat exchanger performance is based on the use of the AIRCOOL™ computer program. The AIRCOOL™ program was produced by Holtec International Corporation. This program uses methods described in Compact Heat Exchangers by Kays and London for predicting heat exchanger performance and Process Heat Exchangers by Kern for predicting dehumidification heat transfer coefficients. Validation analyses and benchmark data comparison have been performed by Holtec for this computer code.

Previously, the CARCA™ computer code, developed by Westinghouse Electric Corporation, was used for predicting containment fan cooler performance, as described in the PBNP FSAR §14.3.4.

The AIRCOOL™ program is also used for predicting battery room cooler performance. All other analyses for heat exchanger performance in the service water system are based on standard heat exchanger performance methodologies.

PROBABILISTIC SAFETY ANALYSIS

The probabilistic safety analysis for PBNP is based on average out of service times for equipment at PBNP. Fundamentally, the average out of service times for equipment are based on the maintenance requirements, failure rates and subsequent repair times for this equipment. Technical Specifications allowed outage times are adhered to as part of this process, but are not typically the determining factor for limiting out of service times for the containment fan coolers or the service water system equipment.

The proposed Technical Specifications for the service water system could actually decrease the average out of service time for service water pumps. This is based on the fact that previously, two service water pumps, one in each train, could have been inoperable indefinitely without limitation. The proposed specifications establish limitations for one service water pump being inoperable and successively shorter time limits for additional pumps being out of service.

Typically, the containment fan coolers are operated for normal cooling of the containment. Inoperability of any operating fan cooler is rapidly recognizable. The operating history of the containment fan cooler units show relatively high reliability of these components. This is not expected to change even with the use of the proposed Technical Specifications for containment fan coolers, which allow more fan coolers to be out of service for longer periods than the existing Technical Specifications.

The proposed Technical Specifications for normal and emergency power are more restrictive than the current Technical Specifications requirements. The current Technical Specifications allow normal or emergency power to Unit 1 A06 or Unit 2 A05 without limitation on the other unit. Hence, during reactor operation outages, normal or emergency power to these buses could be out

of service indefinitely without limitation. The proposed Technical Specifications would no longer allow this and therefore average availability of normal and emergency power to these buses may increase.

Therefore, based on the preceding evaluation of the probabilistic safety analyses it is concluded that the proposed Technical Specifications for the containment fan coolers, service water pump equipment, and normal and emergency power are not expected to significantly affect the results of the PBNP probabilistic safety analysis as documented via Wisconsin Electric's response to GL 88-20.

CONCLUSIONS

These proposed changes provide appropriate limiting conditions for operation, action statements, allowable outage times, and design specifications for the Point Beach Nuclear Plant Technical Specifications for the containment accident fan coolers, service water equipment, and normal and emergency power supplies. Therefore, continued safe operation of PBNP is assured by these proposed Technical Specifications changes.

Technical Specification Equipment Supported by Service Water

EQUIPMENT	SERVICE WATER SUPPORT FUNCTION	SERVICE WATER SUPPLY	APPLICABLE TECHNICAL SPECIFICATIONS SECTIONS
G-01 Emergency Diesel Generator Train A (SHARED)	Engine cooling water supply.	Normally South header. North header alternate supply.	LCO §15.3.7 SURVEILLANCE §15.4.6
G-02 Emergency Diesel Generator Train A (SHARED)	Engine cooling water supply.	Normally North header. South header alternate supply.	LCO §15.3.7 SURVEILLANCE §15.4.6
1P-29 Unit 1 Turbine driven AFW Pump	Bearing cooling and alternate suction source.	Normally South header. North header alternate supply.	LCO §15.3.4 SURVEILLANCE §15.4.8
P-38A Train A Electric motor driven AFW Pump (SHARED)	Bearing cooling and alternate suction source.	Normally South header. North header alternate supply.	LCO §15.3.4 SURVEILLANCE §15.4.8
P-38B Train B Electric motor driven AFW Pump (SHARED)	Bearing cooling and alternate suction source.	Normally North header. South header alternate supply.	LCO §15.3.4 SURVEILLANCE §15.4.8
2P-29 Unit 2 Turbine Driven AFW Pump	Bearing cooling and alternate suction source.	Normally North header. South header alternate supply.	LCO §15.3.4 SURVEILLANCE §15.4.8
HX-12A and HX-12B CCW Heat Exchangers (SHARED)	Cooling water for heat exchanger operation.	Normally South header. North header alternate supply.	LCO §15.3.3 SURVEILLANCE NONE
HX-12C and HX-12D CCW Heat Exchangers (SHARED)	Cooling water for heat exchanger operation.	Normally North header. South header alternate supply.	LCO §15.3.3 SURVEILLANCE NONE
1W-1B1 and 1W-1D1 Unit 1 Containment Fan Cooler Units and associated Heat Exchangers	Cooling water for heat exchanger operation and fan motor cooling.	South Header	LCO §15.3.3 SURVEILLANCE §15.4.5
1W-1A1 and 1W-1C1 Unit 1 Containment Fan Cooler Units and associated Heat Exchangers	Cooling water for heat exchanger operation and fan motor cooling.	West Header	LCO §15.3.3 SURVEILLANCE §15.4.5
2W-1B1 and 2W-1D1 Unit 2 Containment Fan Cooler Units and associated Heat Exchangers	Cooling water for heat exchanger operation and fan motor cooling.	North Header	LCO §15.3.3 SURVEILLANCE §15.4.5
2W-1A1 and 2W-1C1 Unit 2 Containment Fan Cooler Units and associated Heat Exchangers	Cooling water for heat exchanger operation and fan motor cooling.	West Header	LCO §15.3.3 SURVEILLANCE §15.4.5

Attachment 3

SAFETY EVALUATION SUMMARY
Point Beach Units 1 & 2

EVALUATION OF REDUCED CONTAINMENT FAN COOLER AND CONTAINMENT SPRAY PERFORMANCE

1.0 INTRODUCTION

FSAR Section 14.3.4 discusses the Point Beach containment integrity analysis following a hypothetical large break Loss-of-Coolant Accident (LOCA). The original analysis for plant licensing in 1970 demonstrated that the containment's structure and cooling systems were adequate to limit containment internal pressure during a large break LOCA to less than the containment design pressure of 60 psig.

In 1996, Westinghouse performed an evaluation of post-LOCA containment pressure and temperature response, assuming less heat removal by the containment cooling systems than the original analysis. The original analysis took credit for continuous operation of one containment spray train and two containment fan coolers throughout the transient, assuming fan cooler heat transfer performance shown in FSAR Figure 14.3.4-1. The 1996 Westinghouse evaluation was run under more conservative conditions, assuming termination of containment spray one hour into the event and heat removal throughout the event by each of the two fan coolers equivalent to 75% of the heat transfer capability shown in FSAR Figure 14.3.4-1.

2.0 PURPOSE

This document summarizes the results of a 1996 Westinghouse evaluation[1] of containment response to reduced containment cooling. Supplemental Wisconsin Electric reviews of equipment, procedures, and analyses impacted or potentially impacted by changes in the post-LOCA containment pressure and temperature response predicted by the Westinghouse evaluation are also summarized.

3.0 BACKGROUND

In early 1996, Wisconsin Electric contracted Westinghouse to evaluate the effect of reduced containment cooling on the Point Beach containment integrity analysis. The evaluation was requested due to a concern that service water flow to the containment fan coolers may be inadequate to support the heat removal assumptions of the original containment integrity analysis (FSAR Section 14.3.4).

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[1] Westinghouse SECL 96-067 dated 5/9/96

The original containment integrity analysis assumed the loss of one safeguards power train as the limiting single failure, leaving one spray train and two containment fan coolers operating to remove the post-accident containment heat load. The spray pump and fan coolers were assumed to remove heat at their design heat removal rates beginning at 60 seconds after the event. The acceptance criterion for the analysis was that containment pressure must not exceed the design pressure of 60 psig throughout the transient. Although the analysis generated containment pressure and temperature response curves as a function of time, the ability of the heat removal systems to return the containment to ambient pressure and temperature within a specified time was not an acceptance criterion for this analysis.

For the 1996 evaluation, the original COCO model used to analyze Point Beach containment integrity (circa 1968) was not available at Westinghouse. Therefore, a new COCO model was benchmarked against the results of the original model[2]. The new model matched the original model's containment pressure response within approximately one percent. This benchmarking concluded that the new model was adequate for evaluation purposes after 10 seconds into the transient[3]. However, since the temperature peak occurs so early in the transient, and since containment spray and fan coolers are not assumed to remove heat until 60 seconds into the analysis, the new model was acceptable for predicting containment pressure and temperature response to the long-term containment cooling systems.

After the new COCO model was benchmarked, the model was then rerun assuming two conditions more conservative than the original analysis. First, the single operating train of containment spray was secured at the one hour point, to model current procedures that allow spray to be secured at recirculation switchover. Second, the heat removed by the two fan coolers throughout the event was modeled at 75% of the rate assumed in FSAR Figure 14.3.4-1.

The new model also included the following changes compared to the original analysis:

a. To track containment response for a longer period, the evaluation run time was extended to 45,000 seconds, compared to 10,000 seconds in the original analysis.

b. The 1979 Decay Heat Standard (ANSI/ANS-5.1-1979) was used, rather than the pre-ANS 1971 standard in the original analysis.

c. The model assumed 33°F of injection water cooling by the RHR heat exchanger during the recirculation phase, based on a previous WE calculation. The original model assumed RWST water injected throughout the event.

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[2] The benchmarking case was chosen as Case 1 (the "all available energy case") shown in FSAR Figure 14.3.4-6

[3] For the first ten seconds, the containment temperature results generated with the new model are non-conservative compared to the existing analysis because of computer program differences; therefore, the first ten seconds are ignored.

4.0 EVALUATION

Effect on Containment Peak Pressure and P/T Profiles

The results of the Westinghouse evaluation are shown graphically in the attached figures. Figure 1 is the containment pressure response and Figure 2 is the containment temperature response. Each figure compares the current FSAR case (two fan coolers and one spray pump operating throughout the event) to the reduced cooling case (spray termination at one hour; two fan coolers at 75% heat removal). The results show that the peak containment pressure is approximately 53 psig for both cases (well below the 60 psig containment design pressure), and the peak occurs prior to any heat removal by the fans and sprays for both cases. Therefore, peak containment pressure following a LOCA is unaffected by the reduced containment heat removal rate assumed in the evaluation.

Reducing the rate of containment heat removal by spray and fan coolers changes the shape of the containment pressure and temperature profiles. Figures 1 and 2 show that the overall impact of terminating spray at one hour and running two fan coolers with reduced heat removal is a more gradual depressurization to the one hour point, a small increase in pressure and temperature when sprays are secured at one hour, and a more gradual depressurization thereafter, compared to the original FSAR case with two fan coolers and one spray pump operating throughout the event.

Because certain plant equipment, procedures, and programs may also be affected by revising the post-LOCA containment profiles, the following additional evaluations were made based on the Westinghouse evaluation results:

Effect on Offsite and Control Room Dose Analyses

The offsite dose analysis (FSAR Section 14.3.5) and the control room dose analysis following a LOCA both assume a maximum containment leak rate (at the containment design pressure of 60 psig) of 0.4 weight percent per day for the first 24 hours, followed by a leak rate of 0.2 weight percent per day for the next 29 days. These rates are consistent with leakage criteria in Regulatory Guide 1.4 for evaluating radiological consequences of a LOCA. To remain enveloped by these assumptions, the post-LOCA containment pressure profile must show that the containment remains at or below 60 psig for the first 24 hours, and then drops to 15 psig or less for the next 29 days. A 15 psig limit is imposed after 24 hours because a reduction in leakage by a factor of two requires a reduction in pressure by a factor of four (i.e., the square root relationship between pressure and leakage rate).

The pressure profile in Figure 1 shows that containment pressure does not reach 60 psig, and will decay to less that 15 psig in the first 24 hours, which will limit the leakage to a rate at or below the assumptions of the dose analyses. The dose releases that would result from the revised pressure profile are therefore enveloped by the worst-case releases that have already been documented in the FSAR and found to be acceptable.

Effect on Equipment Qualification (EQ)

The PBNP Equipment Qualification Program was reviewed to determine if revised profiles for post-LOCA containment pressure and temperature would affect the qualification of any equipment located inside containment. Based on a comparison of equipment qualification test profiles to the revised containment curves in Figures 1 and 2, the environmental qualification of in-containment equipment is not affected by the revised curves. While the test profiles for some equipment did not completely envelope the revised containment curves at every point in time, overall equipment test profiles (considering multiple transients, excess temperature and pressure margins, and the duration of those margins) were found to be more demanding than the revised accident profiles[4]. Therefore, the ability of environmentally qualified equipment inside containment to perform its function following a LOCA is not affected by the revised containment profiles from this evaluation.

Effect on Post-Accident Sampling Capability

NUREG-0737 Item II.B.3 required the capability to promptly obtain containment atmosphere samples following a LOCA, with the combined time allowed for sampling and analysis being three hours or less from the time a decision is made to take a sample. The earliest time to expect a request for a containment air sample has been estimated to be 1.5 hours after a LOCA.

The Post-Accident Sampling System (PASS) air sampling pump motor is designed to operate at a containment pressure of 23 psig or less. The revised containment pressure profile shows that the slight increase in containment pressure at one hour, which is caused by securing containment spray, will increase pressure above 23 psig for several hours. This pressure increase would delay taking a containment air sample until pressure once again dropped below 23 psig. However, the containment integrity analysis imposes very conservative core cooling assumptions to generate a maximum containment pressure response. There is no requirement or commitment that the post-accident sampling capability must be based on these extremely conservative results.

A more realistic prediction of actual containment pressure response, at the point when containment spray is secured, can be made by comparing containment heat addition to containment heat removal at the one hour mark. Based on the FSAR and WE calculations, one hour after a LOCA the containment heat addition rate from core decay heat and structural heat sources will be approximately 90×10^6 BTU/hr. At the same time, the combined heat removal rate from two fan coolers operating at 75% and one RHR heat exchanger cooling recirculated sump water is estimated at 94×10^6 BTU/hr. Based on the net containment cooling effect one hour after a LOCA, containment pressure will realistically continue downward after spray is secured, and post-accident containment air sampling will be possible within the time constraint imposed by NUREG-0737.

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[4] Equipment Qualification Information Request 96.006 dated 3/25/96

Effect on Containment Purge Valve Seal Capability

The containment purge valves rely on inflatable T-ring seals to support their post-LOCA containment isolation function. Assuming that instrument air is lost for the duration of the accident, an air accumulator on each valve maintains a positive pressure on the seal relative to containment pressure. The ability of the accumulator to hold seal pressure is tested routinely by an inservice test. The test acceptance criterion allows a maximum pressure decay of 5 psig over a one hour period from an initial nominal pressure of 100 psig.

When the worst-case accumulator pressure decay profile is superimposed on the revised containment pressure profile in Figure 1, it can be seen that the T-ring seals will be supplied with air at a pressure above containment pressure throughout the analyzed duration of the transient. A positive seal pressure relative to containment pressure will maintain containment purge valve seal integrity. Therefore, the ability of the purge valve seals to support the containment isolation function will not be impaired by the revised containment pressure response shown in Figure 1.

5.0 CONCLUSIONS

a. The original containment integrity analysis and the 1996 Westinghouse evaluation demonstrate that the peak containment pressure occurs well before the containment cooling systems are assumed to begin removing heat at 60 seconds after the event, and that the peak pressure for both analyses is approximately 53 psig, which is well below the 60 psig containment design pressure. Therefore, the reduced containment heat removal rate assumed in the Westinghouse evaluation has no effect on the time or magnitude of the containment pressure peak following a LOCA.

b. The 1996 evaluation demonstrates that a reduced containment heat removal rate (compared to the original analysis) caused by securing containment spray at one hour and assuming 75 % fan cooler performance is sufficient to accomplish long-term containment depressurization and cooldown.

c. The post-LOCA containment temperature and pressure profiles (Figures 1 and 2) for the reduced cooling case do not adversely affect the offsite and control room dose analyses, the EQ program, or the ability of the containment purge valves to perform their containment isolation function.

d. The capability to take a timely containment atmosphere sample after a LOCA is adversely affected by the revised containment pressure profile (Figure 1) for the reduced cooling case. However, a more realistic containment heat balance shows that cooling capability will exceed heat addition at one hour, and containment pressure will continue downward. This will allow a containment air sample to be taken within the time constraints imposed by NUREG-0737.

Figure 1

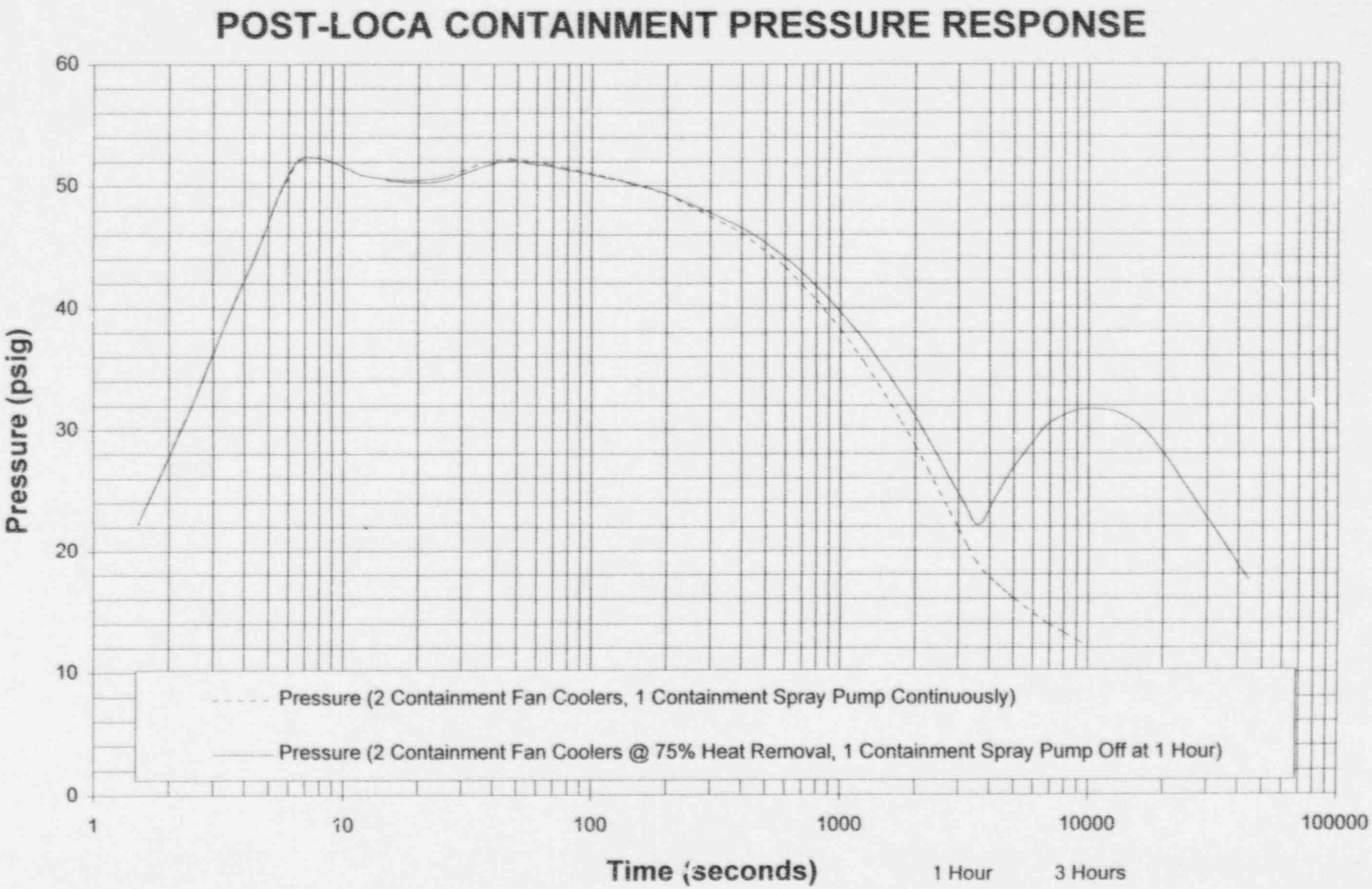
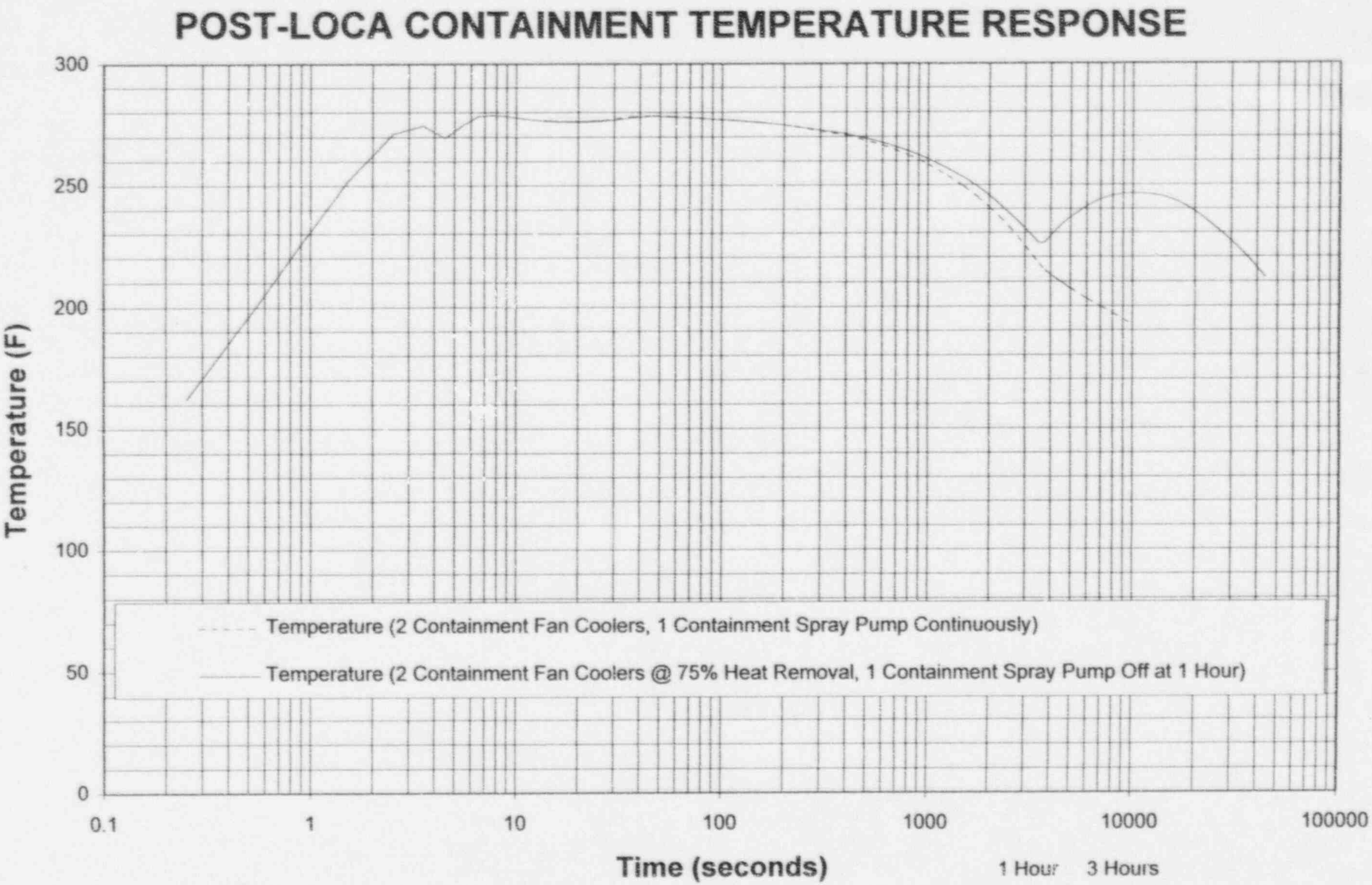

POST-LOCA CONTAINMENT PRESSURE RESPONSE
60
50
40
30
20
10
0
Pressure (psig)
1
10
100
1000
10000
100000
Time (seconds)
1 Hour
3 Hours
Pressure (2 Containment Fan Coolers, 1 Containment Spray Pump Continuously)
Pressure (2 Containment Fan Coolers @ 75% Heat Removal, 1 Containment Spray Pump Off at 1 Hour)

Figure 2


POST-LOCA CONTAINMENT TEMPERATURE RESPONSE
Temperature (F)
300
250
200
150
100
50
0
0.1
1
10
100
1000
10000
100000
Time (seconds)
1 Hour
3 Hours
Temperature (2 Containment Fan Coolers, 1 Containment Spray Pump Continuously)
Temperature (2 Containment Fan Coolers @ 75% Heat Removal, 1 Containment Spray Pump Off at 1 Hour)

ATTACHMENT 4

TECHNICAL SPECIFICATION CHANGE REQUEST 192

"NO SIGNIFICANT HAZARDS CONSIDERATION"

In accordance with the requirements of 10 CFR 50.91(a), Wisconsin Electric Power Company (Licensee) has evaluated the proposed changes against the standards of 10 CFR 50.92 and has determined that the operation of Point Beach Nuclear Plant, Units 1 and 2 in accordance with the proposed amendments does not present a significant hazards consideration. The analysis of the requirements of 10 CFR 50.92 and the basis for this conclusion are as follows:

1. Operation of this facility under the proposed Technical Specifications will not create a significant increase in the probability or consequences of an accident previously evaluated.

   The probabilities of accidents previously evaluated are based on the probability of initiating events for these accidents. Initiating events for accidents previously evaluated for Point Beach include: Control rod withdrawal and drop, CVCS malfunction (Boron Dilution), startup of an inactive reactor coolant loop, reduction in feedwater enthalpy, excessive load increase, losses of reactor coolant flow, loss of external electrical load, loss of normal feedwater, loss of all AC power to the auxiliaries, turbine overspeed, fuel handling accidents, accidental releases of waste liquid or gas, steam generator tube rupture, steam pipe rupture, control rod ejection, and primary coolant system ruptures.

   This license amendment request proposes to change the limiting conditions for operation, action statements, allowable outage times, and design specifications for the Point Beach Nuclear Plant Technical Specifications associated with the containment accident fan coolers, service water equipment, and normal and emergency power supplies.

   These proposed changes do not cause an increase in the probabilities of any accidents previously evaluated because these changes will not cause an increase in the probability of any initiating events for accidents previously evaluated. In particular, these changes affect accident mitigation systems and equipment which do not cause accidents.

   The consequences of the accidents previously evaluated in the PBNP FSAR are determined by the results of analyses that are based on initial conditions of the plant, the type of accident, transient response of the plant, and the operation and failure of equipment and systems. The changes proposed in this license amendment request provide appropriate limiting conditions for operation, action statements, and allowable outage times for service water, containment cooling and normal and emergency power supplies.

   The proposed changes affect components that are required to ensure the proper operation of engineered safety features equipment. The proposed changes do not increase the probability of failure of this equipment or its ability to operate as required for the accidents previously evaluated in the PBNP FSAR. The proposed changes that increase the allowed outage times for engineered safety features equipment continue to provide appropriate

limitations for these conditions because sufficient equipment is still required to be operable for accident mitigation and the proposed allowed outage times are consistent with currently accepted time periods for these situations.

Therefore, this proposed license amendment does not affect the consequences of any accident previously evaluated in the Point Beach Nuclear Plant FSAR, because the factors that are used to determine the consequences of accidents are not being changed.

2. Operation of this facility under the proposed Technical Specifications change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

New or different kinds of accidents can only be created by new or different accident initiators or sequences. New and different types of accidents (different from those that were originally analyzed for Point Beach) have been evaluated and incorporated into the licensing basis for Point Beach Nuclear Plant. Examples of different accidents that have been incorporated into the Point Beach Licensing basis include anticipated transients without scram and station blackout.

The changes proposed by this license amendment request do not create any new or different accident initiators or sequences because these changes to limiting conditions for operation, action statements, allowable outage times, and design specifications for service water, containment cooling and normal and emergency power supplies will not cause failures of equipment or accident sequences different than the accidents previously evaluated. Therefore, these proposed Technical Specification changes do not create the possibility of an accident of a different type than any previously evaluated in the Point Beach FSAR.

3. Operation of this facility under the proposed Technical Specifications change will not create a significant reduction in a margin of safety.

The margins of safety for Point Beach are based on the design and operation of the reactor and containment and the safety systems that provide their protection.

The changes proposed by this license amendment request provide the appropriate limiting conditions for operation, action statements, allowable outage times, and design specifications for service water, containment cooling and normal and emergency power supplies. This ensures that the safety systems that protect the reactor and containment will operate as required. The design and operation of the reactor and containment are not affected by these proposed changes. Therefore, the margins of safety for Point Beach are not being reduced because the design and operation of the reactor and containment are not being changed and the safety systems and limiting conditions of operation for these safety systems that provide their protection that are being changed will continue to meet the requirements for accident mitigation for Point Beach Nuclear Plant.