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Constellation Energy
Nine Mile Point Nuclear Station

January 4, 2007

U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

ATTENTION: Document Control Desk

SUBJECT: Nine Mile Point Nuclear Station
Unit No. 2; Docket No. 50-410

License Amendment Request Pursuant to 10 CFR 50.90: Revision of Service Water and Ultimate Heat Sink Temperature Requirements – Technical Specification 3.7.1

Pursuant to 10 CFR 50.90, Nine Mile Point Nuclear Station, LLC, (NMPNS) hereby requests an amendment to Nine Mile Point Unit 2 (NMP2) Facility Operating License NPF-69. The proposed changes to the Technical Specifications (TSs) contained herein would revise TS 3.7.1, "Service Water (SW) System and Ultimate Heat Sink (UHS)." The SW system supplies cooling water from Lake Ontario to various essential and non-essential components, as required, during normal plant operation, shutdown conditions, and following accidents and transients. The proposed changes are as follows:

- Revise the existing Limiting Condition for Operation (LCO) statement to require four operable SW pumps to be in operation when SW subsystem supply header water temperature is ≤ 82°F, and add a requirement that five operable SW pumps be in operation when SW subsystem supply header water temperature is > 82°F and ≤ 84°F.
- Delete Condition G and the associated Required Actions and Completion Times. Condition G was added in License Amendment No. 113 (issued by NRC letter dated May 7, 2004, TAC No. MC0594) to allow continued operation with short-term SW subsystem supply header water temperatures above 82°F, based on Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler 330, "Allowed Outage Time – Ultimate Heat Sink," Revision 3.
- Revise Surveillance Requirement (SR) 3.7.1.3 to increase the maximum allowed SW subsystem supply header water temperature from 82°F to 84°F, and modify the requirements for increasing the surveillance frequency as the temperature approaches the limit.

The description and technical basis of the proposed changes are contained in Attachment (1). The proposed TS changes are indicated on the mark-up pages provided in Attachment (2), and associated TS

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Bases changes are shown in Attachment (3). The TS Bases changes are provided for information only and will be processed in accordance with the NMP2 TS Bases Control Program (TS 5.5.10).

During the summer of 2005, a sustained period of unusually hot weather caused Lake Ontario water temperatures, and therefore SW supply header temperatures, to approach the current TS 3.7.1, Condition G, entry condition value of > 82°F, which requires temperature averaging over the previous 24 hour period per Required Action G.1. If the SW supply header temperature average exceeds 82°F as an average value, a plant shutdown would need to be initiated and hot shutdown achieved within 12 hours and cold shutdown within 36 hours. Existing analyses provide adequate margin for impacted safety systems and safety-related heat exchangers to support revising the TS to allow continuous operation with SW supply header water temperature ≤ 84°F and elimination of the temperature averaging requirement.

NMPNS requests NRC review and approval of this license amendment request in a timely manner, with implementation within ninety (90) days of receipt of the approved amendment.

Pursuant to 10 CFR 50.91(b)(1), NMPNS has provided a copy of this license amendment request, with attachments, to the appropriate state representative.

Should you have any questions regarding the information in this submittal, please contact M. H. Miller, Licensing Director, at (315) 349-5219.

Very truly yours,

STATE OF NEW YORK :
: **TO WIT:**
COUNTY OF OSWEGO :

I, Timothy J. O'Connor, being duly sworn, state that I am Vice President Nine Mile Point, and that I am duly authorized to execute and file this request on behalf of Nine Mile Point Nuclear Station, LLC. To the best of my knowledge and belief, the statements contained in this document are true and correct. To the extent that these statements are not based on my personal knowledge, they are based upon information provided by other Nine Mile Point employees and/or consultants. Such information has been reviewed in accordance with company practice and I believe it to be reliable.

Subscribed and sworn before me, a Notary Public in and for the State of New York and County of Oswego, this 4th day of January 2007.

WITNESS my Hand and Notarial Seal: Sandra A. Oswald
Notary Public

My Commission Expires: January 4, 2007
Date

SANDRA A. OSWALD
Notary Public, State of New York
No. 01OS6032276
Qualified in Oswego County
Commission Expires 10/25/09

TJO/DEV/sac

Attachments: (1) Technical Basis and No Significant Hazards Determination
(2) Proposed Technical Specification Changes (Mark-up)
(3) Changes to Technical Specifications Bases Pages (Mark-up)

cc: S. J. Collins, NRC
D. V. Pickett, NRC
Resident Inspector, NRC
J. P. Spath, NYSERDA

ATTACHMENT (1)

TECHNICAL BASIS AND

NO SIGNIFICANT HAZARDS DETERMINATION

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1. DESCRIPTION

This letter is a request to amend Operating License NPF-69 for Nine Mile Point Unit 2 (NMP2). The proposed changes would revise the requirements of Technical Specification (TS) 3.7.1, "Service Water (SW) System and Ultimate Heat Sink (UHS)." The SW system supplies cooling water from Lake Ontario to various essential and non-essential components, as required, during normal plant operation, shutdown conditions, and following accidents and transients.

License Amendment No. 113, issued by NRC letter dated May 7, 2004 (Reference a), added Condition G and associated Required Actions and Completion Times to TS 3.7.1. Condition G is based on Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler 330, "Allowed Outage Time – Ultimate Heat Sink," Revision 3. It allows averaging of the SW supply header water temperature over the previous 24-hour period when the water temperature is > 82°F and ≤ 84°F, and also requires placing a fifth SW pump in operation.

During the summer of 2005, a sustained period of unusually hot weather caused Lake Ontario water temperatures, and therefore SW supply header temperatures, to approach the current TS 3.7.1, Condition G, entry condition value of > 82°F. If the averaged SW supply header temperature were to exceed 82°F, a plant shutdown would need to be initiated and hot shutdown achieved within 12 hours and cold shutdown within 36 hours. Existing analyses provide adequate margin for impacted safety systems and safety-related heat exchangers to support revising the TS to allow continuous operation with SW supply header water temperature ≤ 84°F and elimination of the temperature averaging requirement.

2. PROPOSED CHANGE

The proposed changes to TS 3.7.1, "Service Water (SW) System and Ultimate Heat Sink (UHS)," are as follows:

- Revise the existing Limiting Condition for Operation (LCO) statement to require four operable SW pumps to be in operation when SW subsystem supply header water temperature is ≤ 82°F, and add a requirement that five operable SW pumps be in operation when SW subsystem supply header water temperature is > 82°F and ≤ 84°F.
- Delete Condition G and the associated Required Actions and Completion Times, and make other resulting formatting changes.
- Revise Surveillance Requirement (SR) 3.7.1.3 to increase the maximum allowed SW subsystem supply header water temperature from 82°F to 84°F.
- Revise the frequency for performing SR 3.7.1.3 by (1) increasing from ≥ 75°F to ≥ 78°F the supply header water temperature at which the 4-hour frequency begins; and (2) deleting the requirement to perform the SR at a 2-hour frequency when the supply header water temperature is ≥ 79°F.

The proposed TS changes are indicated on the mark-up pages provided in Attachment (2). Associated TS Bases changes are shown in Attachment (3). These TS Bases changes are provided for information only and will be processed in accordance with the NMP2 TS Bases Control Program (TS 5.5.10).

3. BACKGROUND

The SW system is a once-through system that supplies water from Lake Ontario to various essential and non-essential components, as required, during normal plant operation, shutdown conditions, and following accidents and transients. The SW system is designed with suitable redundancy to provide a reliable source of cooling water for the removal of heat from the following components:

Safety Related Components

1. Residual heat removal (RHR) heat exchangers
2. RHR pump seal coolers
3. Emergency diesel generators (EDGs)
4. Control building area coolers and chillers
5. Hydrogen recombiners
6. Safety-related area coolers
7. Spent fuel pool heat exchangers

Non-Safety Related Components

1. Main condenser steam jet air ejector system pre-coolers and air removal vacuum pump seal coolers
2. Reactor building closed loop cooling (RBCLC) system heat exchangers
3. Reactor building normal supply air cooler
4. Turbine building closed loop cooling (TBCLC) system heat exchangers
5. Turbine building area coolers and chillers

The SW system is described in Section 9.2.1 of the NMP2 Updated Safety Analysis Report (USAR) and consists of the UHS, two essential cooling water headers (loops A and B), and their associated pumps, piping, valves, and instrumentation. Loops A and B are configured to provide cooling water to essential equipment in Divisions 1 and 2, respectively. Either the A or B loop of the SW system can supply cooling water to Division 3 (high pressure core spray) components.

In addition to the SW system, the UHS supplies cooling and process fluid for the fire protection water (FPW) system pumps. The FPW system is described in Section 9.5.1 of the USAR and consists of one electric driven main fire pump, one diesel engine driven main fire pump, two pressure maintenance pumps, and associated fire mains, hydrants, standpipes, hose stations, sprinklers, water spray and deluge systems.

The UHS is described in Section 9.2.5 of the USAR and consists of Lake Ontario (the UHS) and the SW intake and discharge systems. The intake system includes two intake structures, an intake deicing heater system, two intake tunnels, and a pump intake bay. The discharge system includes an onshore discharge bay, a portion of one intake tunnel, a discharge tunnel, and a two-port discharge diffuser. The UHS is capable of providing sufficient cooling to meet all of the SW system post-LOCA cooling requirements for a 30-day period.

Lake Ontario water enters the two offshore intake structures through vertical bar racks that prevent large debris from entering the intake system. The bar racks are electrically heated by the intake deicing heater system to minimize ice formation in the flow passages. From the intake structures, the water flows through two intake tunnels (one tunnel per intake structure), then passes through trash racks and traveling water screens, and enters the onshore SW intake bay. Cooling water from the pump intake bay is then pumped by the SW pumps through strainers to a common header. Two normally open divisional cross-connect valves in the header separate (when closed) the SW system into two redundant headers (Loops A and B) which supply the essential (safety-related) components. Three pumps are available for each of the two loops (six pumps total). During normal plant operation, SW is supplied to non-essential components from taps off the Loop A side of the common header. Each of the non-essential supply and return lines is provided with two isolation valves located in series.

After removing heat from the essential and non-essential components, the SW discharge is directed to the SW discharge bay via two redundant and separate discharge headers. From the discharge bay, the discharge water flows by gravity through the discharge portion of one intake tunnel. The water then enters the discharge tunnel and continues to flow by gravity to the discharge diffuser, where it is discharged to Lake Ontario through the diffuser nozzles.

During a loss of offsite power (LOOP) or a loss of coolant accident (LOCA) coincident with a LOOP, the SW supply header (divisional) cross-connect and isolation valves close automatically such that the non-essential components (required for normal operation) are isolated from the SW system, and cooling is directed only to essential components. However, if a partial LOOP occurs (i.e., one offsite power circuit is lost, resulting in de-energizing either the Division 1 or Division 2 4.16 kV emergency bus), the non-essential components still isolate, but the SW supply header cross-connect valves do not close automatically. In addition, during the LOOP or LOCA coincident with a LOOP, one SW pump in each loop is restarted automatically in a timed sequence (provided the associated pump discharge valve has automatically closed).

During a LOCA without a coincident LOOP, the SW pumps that are operating remain in operation (no SW pumps are automatically started on a LOCA signal), the SW supply headers remain cross-connected (the SW supply header cross-connect valves are not automatically closed), and the non-essential components are not automatically isolated from the SW system.

NMP2 TS Limiting Condition for Operation (LCO) 3.7.1 currently requires both the Division 1 and Division 2 SW subsystems (loops) and the UHS to be operable and four of the six SW pumps to be operable and in operation. In order to support a LOCA without a coincident LOOP, a minimum of three operating SW pumps are required. The LCO requirement of four operable and operating SW pumps provides assurance that there will be no loss of the SW heat removal safety function assuming a single failure of one of the pumps. The current LCO is based on a maximum SW supply header water temperature of 82°F.

With SW supply header water temperature > 82°F and ≤ 84°F, TS 3.7.1 Condition G allows operation to continue provided that the water temperature averaged over the previous 24-hour period is ≤ 82°F and five SW pumps are in operation. Condition G was added to TS 3.7.1 in License Amendment No. 113 (Reference a) and was based on TSTF-330, Revision 3. At that time it was believed that the average 82°F limit would provide sufficient margin such that it would not impose undue operating limits on the plant. However, during the summer of 2005, a sustained period of unusually hot weather caused Lake Ontario water temperatures, and therefore SW supply header temperatures, to approach the current TS 3.7.1, Condition G, entry condition value of > 82°F. The proposed TS changes would allow continuous operation with SW supply header water temperature ≤ 84°F. Analyses and evaluations to support the proposed TS changes are discussed in the following section.

4. TECHNICAL ANALYSIS

The current TS requirements allow operation with the SW supply header water temperature between 82°F and 84°F provided the average temperature over the previous 24-hour period is ≤ 82°F and a fifth SW pump is placed in service. The temperature averaging requirement is based on TSTF-330, Revision 3, whereas the requirement to place a fifth SW pump in service is an NMP2-specific variation to TSTF-330. NMPNS submitted a license amendment request by letter dated August 22, 2003 (Reference b), as supplemented by NMPNS letters dated January 12, 2004 and March 11, 2004 (References c and d), to adopt TSTF-330. The analyses and evaluations supporting the license amendment request considered operation at a maximum SW supply header water temperature of 84°F as an unplanned event that occurs for a short period of time. NRC review of these analyses and evaluations is documented in the safety evaluation that accompanied the issuance of License Amendment No. 113 (Reference a).

The proposed changes eliminate the temperature averaging requirement and establish 84°F as the design limit for the UHS water temperature (as measured at the SW subsystem supply headers). The analyses and evaluations that were performed to support adoption of TSTF-330 (References b and c) have been re-assessed to support continuous plant operation at the proposed 84°F temperature value, as summarized in Sections 4.1 through 4.6 below. The discussions in Sections 4.1 through 4.6 address the capability of affected components to perform their safety functions, and the impact on accidents and transients addressed in the NMP2 USAR.

Current TS Surveillance Requirement (SR) 3.7.1.3 requires verification that the water temperature of each SW subsystem supply header is ≤ 82°F every 24 hours, every 4 hours when supply header water temperature is ≥ 75°F, and every 2 hours when supply header water temperature is ≥ 79°F. In addition to raising the temperature limit from 82°F to 84°F, the proposed changes revise SR 3.7.1.3 by (1) increasing from ≥ 75°F to ≥ 78°F the supply header water temperature at which the 4-hour frequency begins; and (2) deleting the requirement to perform the SR at a 2-hour frequency when the supply header water temperature is ≥ 79°F.

4.1 Evaluation of Components Served by SW

4.1.1 Safety Related Components

4.1.1.1 Residual Heat Removal (RHR) System

RHR Heat Exchangers

The RHR heat exchangers are cooled by the SW system. An increase in the UHS water temperature from 82°F to 84°F would result in a small reduction in the heat removal capacity of the RHR heat exchangers. The evaluations discussed in Sections 4.2 and 4.3 have determined that the heat exchangers have sufficient capacity to maintain plant parameters within applicable design limits.

RHR Pump Seal Coolers

The RHR pump seal coolers are normally supplied from the RBCLC system. Should the normal supply be lost, SW provides a back-up supply. The RHR pump seal coolers are designed for a maximum cooling water temperature of 105°F to ensure adequate protection for the pump seals. Therefore, a UHS water temperature of 84°F will have no impact on operation of the RHR pumps.

4.1.1.2 Emergency Diesel Generators (EDG), Divisions 1, 2, and 3

EDGs

The EDGs receive an auto-start signal on a LOCA, LOOP, or LOCA/LOOP. With offsite power maintained (i.e., LOCA without a LOOP), the EDGs run unloaded until manually secured. The jacket water cooling systems have been evaluated for both the post-LOCA loading condition (generator loaded to no more than 100%) and at the test condition (110% of generator output), assuming design fouling factors, 10 percent tube plugging for the Division 1 and 2 EDGs, and approximately 8 percent tube plugging (26 tubes) for the Division 3 (high pressure core spray) EDG. The jacket water heat exchanger tube plugging limits are managed via the corrective action program whenever a tube requires plugging. For these conditions, the Division 1 and 2 EDG jacket water high outlet temperature alarm setpoint would not be reached with the UHS water temperature as high as 100°F, and the jacket water high outlet temperature trip setpoint is 15°F above the alarm setpoint. The Division 3 EDG jacket water high outlet temperature alarm setpoint would not be reached with the UHS water temperature as high as 89°F, and the jacket water high outlet temperature trip setpoint is 8°F above the alarm setpoint. Thus, there is adequate margin to ensure operability of the EDGs at a UHS temperature of 84°F.

Diesel Generator Building Heating, Ventilation, and Air Conditioning (HVAC)

Each of the three EDG rooms is cooled by a once through ventilation system that does not utilize the UHS for cooling. The cooling medium is outside air. As such, the EDG rooms are not impacted by the UHS water temperature increase.

Each of the three EDG control rooms is cooled by a local unit cooler served by the SW system. These local unit coolers are designed to maintain the EDG control room area temperature at or below 104°F. The current performance requirement for the local unit coolers is based on a UHS water temperature of 84°F. Therefore, operation with a UHS temperature of 84°F will not cause the EDG control rooms to exceed their area design temperature of 104°F.

4.1.1.3 Control Building Chillers

The control building chiller condensers are cooled by the SW system. These chillers were evaluated for operation at a UHS water temperature of 84°F. The evaluation concluded that operation with a UHS temperature of 84°F would require 4 SW pumps in operation to ensure the post-accident control building chiller flow requirement is met. Placing a fifth SW pump in operation, together with pre-planned actions to manage SW system flow rates and heat loads, ensures that sufficient SW flow to the control building chillers is available to meet accident analysis assumptions when the UHS temperature is > 82°F and ≤ 84°F, assuming the single failure of either one operating SW pump or one operating chiller and no concurrent LOOP (i.e., non-essential loads do not automatically isolate). Thus, control building design basis temperatures can be met for all operating and postulated accident conditions at a UHS temperature of 84°F. Prior to the UHS temperature exceeding 82°F, the minimum required SW flow rate to the chillers is verified in accordance with the SW system operating procedure. Insufficient flow would require the applicable control building chiller(s) to be declared inoperable and actions taken in accordance with TS 3.7.3, "Control Room Envelope Air Conditioning (AC) System."

Operation of a fifth SW pump when the UHS water temperature is > 82°F is presently a Required Action associated with TS 3.7.1 Condition G, which allows a temperature averaging approach and a maximum temperature not to exceed 84°F. The proposed changes to TS 3.7.1 move the requirement for a fifth operating SW pump to the TS 3.7.1 LCO statement since the design will now be based on continuous operation at a UHS temperature of 84°F.

4.1.1.4 Control Building Safety-Related Area Coolers

The local unit coolers in the standby switchgear, battery, and chiller rooms in the control building are designed to maintain the area temperature at or below 104°F. Performance testing of these unit coolers is periodically performed to verify their required capacity based on a UHS water temperature of 84°F. Therefore, operation with a UHS temperature of 84°F will not adversely impact performance of the equipment in these control building rooms since area temperatures will be maintained within design limits.

4.1.1.5 Hydrogen Recombiner

The hydrogen recombiners utilize the SW system to cool the recombiner exhaust gas stream by means of a water spray aftercooler. The purpose of cooling the recombiner exhaust gas is to protect the concrete surrounding the penetration through which the exhaust gases pass to re-enter the primary containment. The recombiner aftercooler sizing is based upon a 180°F cooling water supply temperature. Therefore, raising the UHS water temperature limit to 84°F (well below the 180°F temperature) does not compromise the integrity of the concrete surrounding the penetration through which the exhaust gases pass.

4.1.1.6 Emergency Core Cooling System (ECCS) Equipment Rooms HVAC

Unit coolers served by the SW system are provided in the ECCS equipment rooms, as follows:

- The RHR pump rooms and the low pressure core spray (LPCS) pump room each have two unit coolers. Both unit coolers are normally operable. For normal plant operation (e.g., RHR operating in shutdown cooling mode), the room design temperature of 120°F is maintained by operation of both room unit coolers. For accident conditions and for an Appendix R fire event (RHR pumps A and B), operation of a single room unit cooler is sufficient to maintain the room within the design temperature of 135°F.

- The high pressure core spray (HPCS) pump room has two unit coolers (one cooled by SW Loop A and one cooled by SW Loop B). Both unit coolers are normally required to be operable. For accident conditions, operation of a single unit cooler is sufficient to maintain the room within the design temperature of 135°F.

- The RHR heat exchanger rooms each have one unit cooler. Operation of the unit cooler maintains the room within the design temperatures of 120°F for normal operation (e.g., shutdown cooling mode) and 135°F for accident conditions.

For all of the unit coolers cited above, performance testing is periodically performed to verify their required capacity based on a UHS water temperature of 84°F. Therefore, operation with a UHS temperature of 84°F will not adversely impact performance of the ECCS equipment in the equipment rooms following an accident since area temperatures will be maintained within design limits.

4.1.1.7 Electrical Tunnels and Control Building Basement Cooling

Unit coolers served by the SW system are provided in these areas. In the electrical tunnels, the equipment that is required to operate post-accident is designed to operate with ambient temperatures of ≤ 137°F, which can be maintained without the benefit of unit cooler operation. In the Control Building basement, operation of the area unit coolers with the SW at 84°F will maintain the post-accident area temperature within the equipment operability limit. Therefore, operation with a UHS water temperature of 84°F will not adversely impact performance of the equipment in the electrical tunnels and control building basement since area temperatures will be maintained within design limits.

4.1.1.8 Motor Control Center (MCC) Room and Standby Gas Treatment System (SGTS) Room Unit Coolers

Each MCC room has two unit coolers and each SGTS room has one unit cooler, each served by the SW system. The normal operation and post-accident room design temperature of 104°F is maintained by operation of a single unit cooler in each MCC room, and by operation of the unit cooler in each SGTS room. Performance testing of the MCC and SGTS room unit coolers is periodically performed to verify their required capacity based on a UHS water temperature of 84°F. Therefore, operation with a UHS temperature of 84°F will not adversely impact performance of the equipment in these rooms since area temperatures will be maintained within design limits.

4.1.1.9 Reactor Building General Area Unit Coolers

There are several safety related unit coolers in reactor building general areas that are cooled by the SW system. The general area design temperatures are 104°F for normal operation and 135°F for accident conditions. The limiting cooling requirement occurs during accident conditions when the normal reactor building ventilation system is automatically isolated. Performance testing of these unit coolers is periodically performed to verify their required capacity based on a UHS water temperature of 84°F. Therefore, operation with a UHS temperature of 84°F will not adversely impact performance of the equipment in the reactor building general areas since area temperatures will be maintained within design limits.

4.1.1.10 Reactor Core Isolation Cooling (RCIC) Room Unit Coolers

The SW system supplies cooling water to each of the two RCIC room unit coolers (one cooled by SW Loop A and one cooled by SW Loop B). Both unit coolers are normally operable. Operation of a single unit cooler is sufficient to maintain the room design temperature of 120°F. Performance testing of the RCIC room unit coolers is periodically performed to verify their required capacity based on a UHS water temperature of 84°F. Therefore, operation with a UHS temperature of 84°F will not adversely impact performance of the RCIC equipment in this room since the area temperature will be maintained within the design limit.

4.1.1.11 Spent Fuel Pool Cooling System

Emergency Full Core Offload

The limiting decay heat load for the spent fuel pool cooling system during normal plant operation occurs when there is an emergency full core offload. For operation with a UHS water temperature of 84°F, analysis shows that the spent fuel pool temperature would be approximately 132°F, which is well below the 150°F design limit for an emergency full core offload. Thus, operation with a UHS temperature of 84°F is acceptable.

Post-LOCA Spent Fuel Pool Temperature

The maximum heat load that the spent fuel pool would be subjected to post-LOCA was determined based on discharge of a normal batch of fuel bundles during a 20-day refueling outage, with the remainder of the spent fuel pool full of spent fuel bundles from previous similar refueling discharges. With a UHS water temperature of 84°F, the heat removal capability of the spent fuel pool heat exchangers is such that the peak spent fuel pool temperature would be approximately 116°F, which is well below the 125°F operating limit. Thus, operation with a UHS temperature of 84°F is acceptable.

4.1.1.12 SW System

SW Pumps

The available net positive suction head (NPSH) for the SW pumps operating at design flow (10,000 gpm), minimum intake bay level (233.1 feet), and 100°F lake water temperature is 34.5 feet, which exceeds the required NPSH by approximately 10 feet. Therefore, for both normal and post-accident operation, SW pump operability is not adversely impacted by a UHS temperature of 84°F.

SW Piping System

Service water piping has been evaluated for a UHS water temperature of 84°F. The results show that the piping continues to meet the design basis allowable stress requirements for piping and the allowable loads for equipment nozzles. Pipe supports continue to meet the design basis requirements, based on review of a representative sampling of support calculations. The effect of the 2°F UHS temperature increase on pipe displacements, spring load settings, and header displacements will be minimal and will not affect the design basis limits. Therefore, operation with a UHS temperature of 84°F will have no significant effect on SW piping, nozzles, and supports.

SW Pump Bay HVAC

The two unit coolers in each of the two SW pump bays are cooled by SW. Normally, each pump bay has two SW pumps running with one unit cooler in service. When three SW pumps are running, both unit coolers are needed during elevated UHS temperature conditions. These unit coolers function to maintain the SW pump bays below the area design temperature of 104°F. Performance testing of these unit coolers is periodically performed to verify their required capacity based on a UHS water temperature of 84°F. Therefore, operation with a UHS temperature of 84°F will not adversely impact performance of the equipment in the SW pump bays since area temperatures will be maintained within the design limit.

4.1.2 Non-Safety Related Components

4.1.2.1 Condenser Air Removal System

Main Condenser Steam Jet Air Ejector (SJAE) Pre-Coolers

The SJAEs are normally in service to maintain main condenser vacuum during plant operation. The pre-coolers cool the non-condensible gases and condense vapor removed from the main condenser. The 2°F

UHS water temperature increase will cause a small decrease in the efficiency of the SJAEs. This will have an insignificant impact on main condenser vacuum. Therefore, operation with a UHS temperature of 84°F is acceptable relative to the SJAEs and the main condenser.

Condenser Air Removal Vacuum Pump Seal Coolers

The condenser air removal vacuum pumps are typically in service during plant startup to establish main condenser vacuum. Plant data indicates that for operation with a UHS water temperature of 84°F, the vacuum pump seal return water temperature will be approximately 104°F, which is 21°F below the high temperature alarm setpoint. Therefore, operation with a UHS temperature of 84°F will not adversely impact performance of the vacuum pumps.

4.1.2.2 Reactor Building Closed Loop Cooling (RBCLC) System

The RBCLC system is a non-safety related system that provides cooling water to reactor auxiliary system equipment and accessories during normal plant operation. The three RBCLC system heat exchangers are cooled by the SW system. Two heat exchangers are normally in service with the remaining one in standby. The standby heat exchanger is used during the summer season when UHS temperature is elevated. RBCLC system operating configuration and heat loads are managed in accordance with existing operating procedures to maintain RBCLC temperature within design values. Therefore, operation with a UHS temperature of 84°F will not adversely impact performance of equipment cooled by the RBCLC system.

4.1.2.3 Reactor Building Normal Supply Air Cooler

The non-safety related reactor building supply air system has no accident mitigation function and is isolated during accident conditions. The normal supply air cooler uses SW to cool the normal outside supply air to the reactor building during normal plant operation to ensure habitability of the areas served and optimum performance of equipment. The normal supply air temperature increase due to a 2°F increase in the UHS water temperature will have a negligible affect on reactor building area equipment. This conclusion is based on the small supply air temperature increase (approximately 1°F) resulting from a 2°F increase in the UHS temperature, the large heat capacity of the reactor building, and diurnal outside air temperature variation. In addition, a review of operating data indicates that the reactor building area temperatures will not exceed the design maximum temperatures for operation with a UHS temperature of 84°F. Therefore, operation with a UHS temperature of 84°F will not adversely impact performance of equipment in reactor building areas since area temperatures will be maintained within design limits.

4.1.2.4 Turbine Building Closed Loop Cooling (TBCLC) System

The TBCLC system is a non-safety related system that has no accident mitigation function. It provides cooling water to components in the turbine and radwaste buildings. The three TBCLC heat exchangers are cooled by the SW system. Two heat exchangers are normally in service with the remaining one in standby. The standby heat exchanger is used during the summer season when UHS water temperature is elevated. TBCLC system operating configuration and heat loads are managed in accordance with existing operating procedures to maintain TBCLC temperature within design values. Therefore, operation with a UHS temperature of 84°F will not adversely impact performance of equipment cooled by the TBCLC system.

4.1.2.5 Turbine Building Ventilation

There are a number of turbine building unit coolers served by the SW system that remove heat from various areas of the building. In addition, chillers that are cooled by SW provide chilled water to cool ventilation supply air for the turbine building. As a result of the 2°F increase in UHS water temperature, turbine building area temperatures could increase by approximately 2°F. This small increase will not have a significant impact on the operability of equipment located in the turbine building.

The main steam tunnel area of the turbine building contains leakage detection temperature sensors that close the main steam isolation valves (MSIVs) when the area temperature reaches the setpoint. Evaluation of the existing margins between operating temperatures and the instrument setpoints indicates that there is sufficient margin to accommodate a UHS temperature of 84°F without reaching the high area temperature MSIV closure setpoint during normal plant operation. In addition, the main steam line tunnel lead enclosure high temperature MSIV closure setpoint can be adjusted upward as ambient temperature increases, in accordance with Footnote (b) to TS Table 3.3.6.1-1, Primary Containment Isolation Instrumentation.

4.1.2.6 Fire Protection Water System

Fire Protection Water Pumps

The available NPSH for the fire protection water pumps at a UHS water temperature of 100°F exceeds the required NPSH by approximately 1 foot. Since available NPSH will be greater than 1 foot for operation at a UHS temperature of 84°F, fire protection water pump operability is not adversely impacted by the proposed change.

The diesel-driven fire water pump uses lake water for jacket water cooling. The jacket water heat exchanger is sized for cooling water temperatures up to 90°F. Therefore, there is no adverse impact on pump cooling resulting from operation at a UHS temperature of 84°F.

Electric Fire Pump Room HVAC

The electric fire pump room is cooled by a local area cooler which uses lake water as the cooling medium. Equipment in this room has been evaluated for operation in the higher ambient temperature resulting from the 2°F increase in UHS water temperature. All equipment and components in this room needed for fire protection will function at the elevated temperature. Therefore, the fire protection function is unaffected by an increase in the UHS temperature to 84°F.

4.1.2.7 Temperature-Related Equipment Alarm or Trip Functions

Based on a review of past operating data, a few high temperature alarms are expected when operating with a UHS temperature of 84°F. These alarms alert plant operators to high temperature conditions for certain non-safety related components that are cooled by the RBCLC and TBCLC systems (which are cooled by the SW system - see Sections 4.1.2.2 and 4.1.2.4 above). Operator response to these alarms would be in accordance with established alarm response procedures. In all cases, there is sufficient margin to avoid reaching trip setpoints leading to a reactor scram or a power runback when operating with a UHS temperature of 84°F.

4.2 Accident Analyses

The following accident analyses have been evaluated to assess the impact of increasing the allowable UHS water temperature (as measured at the SW subsystem supply headers) from 82°F to 84°F.

4.2.1 LOCA Primary Containment Response

4.2.1.1 Impact on Accident Analysis Initial Conditions

Suppression Pool Initial Temperature

The RHR system is used to maintain the suppression pool temperature within its Technical Specification limit of 90°F. This TS limit and associated Required Actions are not being changed. The differential temperature between the 84°F SW and the TS-required pool temperature limit is adequate to ensure that the suppression pool can be maintained within the TS-required temperature limits; therefore, the accident analysis initial condition is not affected.

Drywell Initial Temperature

The UHS water temperature indirectly establishes the drywell initial temperature condition. The drywell area coolers are served by the RBCLC system, which is cooled by the SW system. Operation with a UHS temperature of 84°F may result in a slight increase in drywell area temperature; however, review of operating data indicates a large margin between normal operating drywell temperatures and the initial condition value assumed in the accident analysis. The existing drywell temperature limit of 150°F specified in TS 3.6.1.5 is also not affected by the proposed change. Therefore, the accident analysis initial condition assumption is not affected.

4.2.1.2 Peak Primary Containment Pressure

As described in USAR Sections 6.2.1.1.3 and 6.2.1.1.5, the UHS is not immediately relied upon to provide post-accident primary containment heat removal and is not an input to the peak primary containment pressure evaluation. The suppression pool provides the immediate post-accident pressure suppression function and its initial temperature is governed by TS 3.6.2.1, "Suppression Pool Average Temperature," which is not changing. Peak drywell pressure and suppression chamber pressure are reached within a few minutes of the onset of a large break LOCA. Long-term containment heat removal to control primary containment pressure (by use of the containment spray and/or suppression pool cooling modes of the RHR system) is assumed to be initiated at 10 minutes following the LOCA. Therefore, operation with a UHS temperature of 84°F has no affect on the calculated peak post-accident primary containment pressure.

4.2.1.3 Drywell Temperature

The peak drywell temperature conditions are established by the steam line break accident and occur in the early part of the transient (within one minute for the large break, to a few hours for the small break). The peak temperature is determined by the enthalpy of the steam in the reactor vessel. Therefore, peak drywell temperature is not impacted by the proposed increase in UHS temperature to 84°F.

The long-term post-LOCA drywell temperature profile would be several degrees higher because of the impact of the higher UHS temperature on RHR heat exchanger heat removal capability. This will not adversely impact the post-LOCA performance of equipment located in the drywell since there is sufficient margin between the existing calculated post-LOCA temperature profile and the equipment qualification profile to accommodate the small change due to the 2°F increase in UHS temperature.

4.2.1.4 Peak Suppression Pool Temperature

Post-LOCA suppression pool cooling is provided by the RHR system, which is cooled by the SW system. The calculated peak post-LOCA suppression pool water temperature for power uprate conditions (rated thermal power of 3,467 MWt) is approximately 4°F below the 212°F design limit. This analysis was based on a UHS temperature of 82°F and also assumed that 5 percent of the RHR heat exchanger tubes are plugged.

The present tube plugging limit for the RHR heat exchangers is 3 percent and is controlled administratively in a maintenance procedure. This tube plugging limit was established by the evaluations performed by NMPNS to support the license amendment request that was submitted in Reference (b), as supplemented by References (c) and (d), resulting in the NRC issuing License Amendment No. 113 (Reference a). The 3 percent tube plugging limit is necessary to assure that, for the main steam isolation transient from 100 percent power coincident with a LOOP (see Section 4.3.2 of this submittal), the peak suppression pool water temperature remains below the 212°F design limit. Present tube plugging levels in the RHR heat exchangers are: Loop A – no tubes plugged; and Loop B – 11 tubes plugged (approximately 2 percent).

The 4°F margin between the peak calculated pool temperature and the 212°F design limit, together with limiting the allowable RHR heat exchanger tube plugging to 3 percent, is adequate to accommodate the proposed 2°F increase in UHS temperature. Thus, the peak suppression pool temperature design limit would not be exceeded for a LOCA with the UHS temperature continuously at 84°F. In addition, since the NPSH evaluations performed for the ECCS pumps that take suction from the suppression pool are performed at a suppression pool water temperature of 212°F (see USAR Section 6.3.2.2), the NPSH evaluations for the ECCS pumps remain unchanged.

4.2.1.5 Suppression Chamber Air Temperature

Following a LOCA, the suppression chamber is in thermodynamic equilibrium with the suppression pool in the absence of steam bypass (see Section 4.2.2 below for a discussion of steam bypass). Thus, the suppression chamber air temperature will remain below 212°F (see peak suppression pool temperature discussion above). The post-LOCA performance of equipment located in the suppression chamber air space is not adversely affected since the equipment is qualified for the suppression chamber air space design temperature of 270°F. Thus, operation with a UHS temperature of 84°F is acceptable.

4.2.2 LOCA – Allowable Steam Bypass Capacity

The suppression pool steam bypass analysis assumes that containment spray (an operating mode of the RHR system) is actuated at 30 minutes following accident initiation. The containment pressure reduction following containment spray actuation is dependent primarily on spray flow rate and droplet size. It is essentially independent of the spray water temperature that would be expected during a LOCA since the heat transfer is due primarily to steam condensation on the water droplets. In addition, steam bypass capacity was determined without assuming any credit for suppression pool cooling. Therefore, steam bypass capacity is unaffected by the increase in UHS temperature to 84°F.

4.2.3 LOCA Peak Clad Temperature

The peak clad temperature is established within approximately 2 minutes of the onset of a large break LOCA (> 1 ft^2 break) and within approximately 10 minutes of a small break LOCA. The RHR heat removal function is not credited during the first 10 minutes of the LOCA. Therefore, the proposed increase in UHS temperature to 84°F does not impact the peak clad temperature analysis.

4.2.4 Secondary Containment Drawdown Analysis

Following a LOCA, the secondary containment is maintained at a vacuum to limit offsite exposures within the limits of 10 CFR 100. The limiting conditions for establishing and maintaining the required secondary containment vacuum following a LOCA are associated with the coldest outdoor air temperature. This is because greater in-leakage occurs during colder months due to higher differential pressure across the leakage flow paths. In addition, the cold, dense outside air expands as its temperature rises after entering the warm secondary containment, thus occupying a larger volume. The peak UHS temperature occurs in summer, which is a less limiting condition for drawdown since the outdoor air temperature is relatively high. Therefore, operation with a UHS temperature of 84°F coincident with warm outdoor temperatures will have no adverse impact on establishing or maintaining post-LOCA secondary containment vacuum.

4.3 <u>Suppression Pool Temperature Transients</u>

4.3.1 Anticipated Transient Without Scram (ATWS) Event

The UHS temperature does not control the initial condition of the suppression pool, as discussed in Section 4.2.1.1. Thus, the ATWS analysis initial suppression pool temperature condition is not affected by the proposed increase in UHS temperature to 84°F. The peak suppression pool temperature corresponding to an 84°F UHS temperature has been evaluated and found to be within the ATWS pool temperature limit of 190°F. Therefore, operation with a UHS temperature of 84°F will not cause the ATWS suppression pool temperature limit to be exceeded.

4.3.2 MSIV Closure Event (NUREG-0783)

This event (described in USAR Section 6A.10.2) consists of a main steam line isolation transient from 100% power with a LOOP. Evaluation of this transient has determined that with a UHS temperature of 84°F, design basis RHR heat exchanger fouling, and allowable RHR heat exchanger tube plugging limited to 3 percent, the peak suppression pool temperature remains below the design limit of 212°F. This is consistent with evaluations performed by NMPNS to support the license amendment request that was submitted in Reference (b), as supplemented by References (c) and (d), and approved by the NRC staff with the issuance of License Amendment No. 113 (Reference a). The RHR heat exchanger tube plugging limit is controlled administratively in a maintenance procedure.

4.4 Safe Shutdown

4.4.1 Normal Plant Shutdown

Regulatory Guide 1.139 (for Comment), "Guidance for Residual Heat Removal," indicates that one shutdown cooling loop should be able to achieve cold shutdown within approximately 36 hours. In addition, Technical Specification Actions also require cold shutdown to be achieved within 36 hours. With a UHS water temperature of 82°F, the current capability of the equipment is such that cold shutdown is achieved in approximately 10 hours. Operation with a UHS temperature of 84°F will have minimal impact on the ability to achieve cold shutdown in 36 hours since the reduction in heat removal capacity is small (on the order of a few percent).

4.4.2 Alternate Shutdown Cooling Mode

When the normal shutdown cooling path is unavailable, cold shutdown is achieved by an alternate shutdown cooling mode. With a UHS water temperature of 82°F and 5 percent RHR heat exchanger tube plugging, the time to reach cold shutdown is less than 35 hours. The reduction in heat removal with UHS temperature of 84°F is small (approximately 3 percent) because the differential temperature between the suppression pool and SW that is responsible for the heat transfer is not significantly affected. Limiting the allowable tube plugging in the RHR heat exchangers to 3 percent, as noted in Sections 4.2.1.4 and 4.3.2 above, compensates for this small reduction in heat removal capacity. Therefore, the ability to achieve cold shutdown within 36 hours will be maintained when operating with a UHS temperature of 84°F.

4.5 Other Safety Analysis Considerations

4.5.1 Generic Letter 96-06, Assurance of Equipment Operability and Containment Integrity during Design-Basis Accident Conditions

Evaluations have previously been performed in response to Generic Letter (GL) 96-06 to demonstrate that cooling water systems serving the primary containment air coolers, motor winding and bearing coolers, and recirculation pump seal coolers are not susceptible to water hammer or overpressurization of isolated piping inside containment following a design basis accident, such that containment integrity could be compromised. A review of the GL 96-06 evaluations has determined that they are not impacted by operation with a UHS water temperature of 84°F. The initial RBCLC water temperature assumed in the evaluations was 85.5°F, which corresponds to the normal operating temperature. A potential 2°F increase in the RBCLC temperature, resulting from the 2°F increase in the UHS temperature, would not result in any rise in thermal expansion rate or significantly increase the potential for water column separation or two-phase flow. Therefore, the GL 96-06 evaluations are not adversely affected by operation with a UHS temperature of 84°F.

4.5.2 Station Blackout

The Station Blackout (SBO) study did not credit heat removal by the RHR heat exchanger or RHR room area coolers during the 4-hour SBO coping duration. Therefore, the proposed increase in UHS water temperature to 84°F does not affect the SBO results regarding decay heat removal or safe shutdown.

The area temperatures during normal plant operation, which are used as initial conditions for the SBO evaluation, are largely determined by the UHS temperature as discussed in earlier sections. Initial temperature conditions and the predicted temperatures at the end of the 4-hour SBO coping duration have been evaluated for the control room, relay room, battery room, and the switchgear room on elevation 237 feet of the normal switchgear building. The design temperatures of these areas will not be exceeded; therefore, operation with a UHS temperature of 84°F will not adversely impact the SBO study results.

The SBO evaluation for the spent fuel pool assumed that the water temperature is initially at the high temperature alarm setpoint of 125°F. This is significantly higher than the normal operating temperature expected when the UHS temperature is 84°F (approximately 102°F). Since the rate of temperature rise in the spent fuel pool during a SBO event is independent of the UHS temperature, the existing SBO study bounds the impact of operating with a UHS temperature of 84°F.

4.5.3 10 CFR 50 Appendix R Fire Events

The calculated time to reach a cold shutdown condition for the limiting 10 CFR 50 Appendix R fire event is approximately 18 hours for a UHS water temperature of 82°F. A 2°F increase in UHS temperature, to 84°F, will increase the time to reach cold shutdown by a small amount and will not affect the ability to achieve cold shutdown within 72 hours as described in Appendix R.

The SW system cools equipment areas supporting safe shutdown for Appendix R fire events. Operation of equipment in these areas has been evaluated for a UHS temperature of 84°F, with the following results:

- For the RHR pump rooms, the calculated area temperature is bounded by the equipment qualification test temperature for the equipment in the RHR pump rooms. Therefore, operation with a UHS temperature of 84°F will not adversely impact operability of the required components within the RHR pump rooms for the Appendix R fire event. Similar conclusions have been reached for areas with either no unit cooler in operation (motor control center rooms, electrical tunnels) or fewer coolers in operation (reactor building general areas) during an Appendix R fire event.

- For the remote shutdown rooms, operability of required components will be maintained by taking manual actions as necessary to provide adequate heat removal capability. Such actions include aligning service water to the local area coolers in place of the normal chilled water supply, and opening the room doors and panel doors within the rooms to enhance cooling.

- For the remainder of areas with coolers in operation (RCIC room, RHR heat exchanger rooms, SW pump bays, EDG control rooms, battery rooms, switchgear rooms), operation with 84°F SW will not impact the equipment that is required to function since the predicted room temperatures remain within the area design temperatures.

4.6 <u>Environmental Considerations</u>

The UHS for NMP2 is Lake Ontario, which can be classified as an infinite heat sink. The water intake is at least 10 feet below the lake surface and is 480 feet away from the discharge diffuser. Considering the large body of water (infinite heat sink) and large degree of intake and discharge separation, the discharge has an insignificant impact on the UHS intake water temperature.

NMP2 will continue to be operated in accordance with the plant effluent limits specified in the New York State Pollutant Discharge Elimination System (SPDES) permit. For operation with a UHS temperature of

84°F, the maximum service water discharge temperature and the maximum differential between SW intake and discharge temperatures will not exceed the SPDES permit limits.

4.7 SR 3.7.1.3 Revision

SR 3.7.1.3 currently requires verification that the water temperature of each SW subsystem supply header is ≤ 82°F every 4 hours when supply header water temperature is ≥ 75°F, and every 2 hours when supply header water temperature is ≥ 79°F. As stated in the current TS Bases, the SR is performed more frequently as the SW temperature rises since the condition is closer to the maximum water temperature limit. The 2 and 4 hour surveillance frequencies were specified when the NMP2 TS were originally issued in NUREG-1253 dated July 1987 (Reference e). At that time, the maximum allowable UHS water temperature was 76°F, the 4-hour frequency began when the UHS temperature was ≥ 70°F, and the 2-hour frequency began when the UHS temperature was ≥ 74°F.

The proposed changes revise SR 3.7.1.3 by increasing, from ≥ 75°F to ≥ 78°F, the supply header water temperature at which the 4-hour frequency begins. This change results in initiation of more frequent monitoring of UHS temperature when the temperature is within 6°F of the maximum allowable value of 84°F, which is consistent with the original 1987 TS, and assures that plant operators are aware of and are more closely monitoring increasing UHS temperature trends prior to reaching a value of 82°F, when a fifth SW pump must be placed in operation. Performance of the SR at a 2-hour frequency is unnecessary and is proposed to be deleted. The 4-hour frequency is adequate for monitoring and trending of lake temperature variations that typically occur, based on operating experience, and is consistent with the UHS temperature monitoring frequency at the adjoining Nine Mile Point Unit 1. In addition, the standard technical specifications for General Electric plants (NUREG-1433 and NUREG-1434) only specify performance of the UHS water temperature SR once every 24 hours, with no increase in frequency as the UHS temperature nears the maximum allowable value. Thus, performance of the SR at a 2-hour frequency represents an unnecessary burden on the plant operations staff without commensurate safety benefit.

4.8 Overall Conclusions

Engineering analyses and evaluations have been performed to demonstrate that NMP2 can safely operate continuously with a 2°F increase in UHS water temperature (as measured at the SW subsystem supply headers), up to the proposed TS limit of 84°F, and that systems and components that use the UHS for cooling or pump suction can continue to perform their intended safety functions without any undue risk to the health and safety of the public.

5. NO SIGNIFICANT HAZARDS DETERMINATION

Nine Mile Point Nuclear Station, LLC (NMPNS) is requesting a revision to Nine Mile Point Unit 2 Technical Specification (TS) 3.7.1, "Service Water (SW) System and Ultimate Heat Sink (UHS)." The proposed change would increase the maximum allowable UHS water temperature (as measured at the SW subsystem supply headers) for continuous plant operation from 82°F to 84°F, delete the requirements associated with SW temperature averaging when the SW supply header water temperature is > 82°F and ≤ 84°F, and revise the frequency for performing the surveillance to verify that the SW supply header water temperature is within the prescribed limit.

NMPNS has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   The proposed change eliminates the requirement to perform temperature averaging when the UHS temperature is >82°F, establishes 84°F as the design limit for UHS water temperature for operation on a continuous basis, and revises the frequency for verifying that the UHS temperature is within the prescribed limit. The TS currently allow operation with the UHS water temperature temporarily exceeding 82°F, up to a maximum of 84°F. The UHS temperature itself is not an initiator of accidents analyzed in the Updated Safety Analysis Report (USAR). Raising the maximum temperature limit and revising the associated surveillance requirement frequency do not involve any plant hardware changes or new operator actions that could serve to initiate an accident. Continuous operation with the elevated UHS temperature may result in a few balance-of-plant equipment high temperature alarms. Operator response to these alarms would be in accordance with established alarm response procedures. In all cases, trip setpoints leading to a reactor scram or a power runback will not be reached, and the likelihood of component failures that could initiate an accident will not be significantly increased.

   The potential impact of the proposed change on the ability of the plant to mitigate postulated accidents has been evaluated. These evaluations demonstrate that safety-related systems and components that rely on the UHS as the cooling medium or as a pump suction source are capable of performing their intended safety functions at the higher UHS temperature, and that containment integrity and equipment qualification are maintained. The calculated post-accident dose consequences reflected in the USAR do not directly utilize UHS temperature as an input and thus are not impacted by the proposed change.

   Based on the above, the proposed change will have no adverse effect on plant operation or the availability or operation of any accident mitigation equipment. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No.

   The proposed change will not alter the current plant configuration (no new or different type of equipment will be installed) or require any new or unusual operator actions. The proposed change will not alter the way any structure, system, or component functions and will not cause an adverse effect on plant operation or accident mitigation equipment. The response of the plant and the operators following a design-basis accident is unaffected by the change. The proposed change does not introduce any credible new failure mechanisms, malfunctions, or accident initiators not considered in the design and licensing bases. Analyses have shown that the design basis heat removal capability of the affected safety-related components is maintained at the increased UHS water temperature limit. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change does not impact these factors. An evaluation of the safety systems has been performed to ensure their safety functions can be met for operation with a UHS water temperature of 84°F on a continuous basis. Operation with the UHS water temperature temporarily exceeding 82°F, up to a maximum of 84°F, is currently allowed. Operating on a continuous basis at the higher UHS temperature represents a slight reduction in design margins in terms of the ability of affected systems to remove accident heat loads. However, the evaluation has demonstrated that the proposed change does not have a significant impact on the capability of the affected systems to perform their safety-related post-accident functions and to mitigate accident consequences. The design limits for the containment and fuel cladding will not be exceeded, and equipment qualification will be maintained. No protection setpoints are affected by the proposed change. The revised frequency for performing the TS surveillance to verify that the UHS temperature is within the prescribed limit will continue to assure that plant operators are aware of and are monitoring increasing UHS temperature trends prior to reaching a value of 82°F, when a fifth SW pump must be placed in operation. This action is no different than that required by the current TS. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, NMPNS concludes that the proposed amendment presents no significant hazards considerations under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

6. ENVIRONMENTAL ASSESSMENT

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. The change will involve an increase in the plant effluent (service water) discharge temperature to Lake Ontario; however, the maximum discharge temperature permitted by the New York State Pollutant Discharge Elimination System (SPDES) permit will not be exceeded. The proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7. PRECEDENT

The NRC has previously approved similar changes to increase the UHS temperature limit for Nine Mile Point Unit 1 by TS Amendment No. 190 (TAC No. MC8061); H. B. Robinson Steam Electric Plant Unit 2 by TS Amendment No. 187 (TAC No. MA5612); Cooper Nuclear Station, by TS Amendment No. 192 (TAC No. MB2896); and Braidwood Station, Units 1 and 2, by TS Amendment Nos. 107 and 107 (TAC Nos. MA8512 and MA8513), respectively.

8. REFERENCES

a. Letter, NRC (P. S. Tam) to Nine Mile Point Nuclear Station, LLC (J. A. Spina), Nine Mile Pont Nuclear Station, Unit No. 2 – Issuance of Amendment RE: Ultimate Heat Sink Temperature Limit Requirements (TAC No. MC0594), dated May 7, 2004

b. Letter, NMPNS (P. E. Katz) to NRC, License Amendment Request Pursuant to 10 CFR 50.90: Revision of Ultimate Heat Sink Temperature Limit – Technical Specification 3.7.1, dated August 22, 2003

c. Letter, NMPNS (P. E. Katz) to NRC, Response to Request for Additional Information Regarding Ultimate Heat Sink Temperature Requirements – Technical Specification Amendment Application (TAC NO. MC0594), dated January 12, 2004

d. Letter, NMPNS (J. A. Spina) to NRC, Ultimate Heat Sink Temperature Requirements – Technical Specification Amendment Application (TAC NO. MC0594), dated March 11, 2004

e. NUREG-1253, Technical Specifications, Nine Mile Point Nuclear Station, Unit No. 2, Docket No. 50-410, Appendix "A" to License No. NPF-69, dated July 1987

9. REGULATORY COMMITMENTS

The following table identifies those actions committed to by NMPNS in this submittal. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

REGULATORY COMMITMENTS	DUE DATE
None	N/A

ATTACHMENT (2)

PROPOSED TECHNICAL SPECIFICATION CHANGES (MARK-UP)

3.7.1-1

3.7.1-2

3.7.1-3

3.7 PLANT SYSTEMS

3.7.1 Service Water (SW) System and Ultimate Heat Sink (UHS)

LCO 3.7.1 a. Division 1 and 2 SW subsystems and UHS shall be OPERABLE.

AND

b.1 Four OPERABLE SW pumps shall be in operation when water temperature of one or two SW subsystem supply headers is ≤ 82°F.

OR

b.2 Five OPERABLE SW pumps shall be in operation when water temperature of one or two SW subsystem supply headers is > 82°F and ≤ 84°F.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SW supply header cross connect valve inoperable.	A.1 Open the SW supply header cross connect valve.	1 hour
	AND	
	A.2 Restore the SW supply header cross connect valve to OPERABLE status.	72 hours
B. One or more non-safety related SW flow paths with one SW isolation valve inoperable.	B.1 Isolate the affected non-safety related SW flow path(s).	72 hours
C. One SW subsystem inoperable for reasons other than Conditions A and B.	C.1 Restore SW subsystem to OPERABLE status.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One division of intake deicer heaters inoperable.	D.1 Restore intake deicer heater division to OPERABLE status.	72 hours
E. One required SW pump not in operation.	E.1 Restore required SW pump to operation.	72 hours
F. Two or more required SW pumps not in operation.	F.1 Restore all but one required SW pump to operation.	1 hour
~~G. Water temperature of one or two SW subsystem supply headers > 82°F and ≤ 84°F.~~	~~G.1 Verify the water temperature of the SW supply headers is ≤ 82°F averaged over the previous 24 hour period.~~ ~~AND~~ ~~G.2 Place a fifth SW pump in operation.~~	~~Once per hour~~ ~~1 hour~~
G ~~H~~. Required Action and associated Completion Time of Condition A, B, C, D, E, or F ~~or G~~ not met. OR Both SW subsystems inoperable for reasons other than Conditions A, B, and C. OR UHS inoperable for reasons other than Condition D ~~or G~~.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.4.9, "Residual Heat Removal (RHR) Shutdown Cooling System – Hot Shutdown," for RHR Shutdown Cooling subsystem(s) made inoperable by SW System or UHS. ---------- G ~~H~~.1 Be in MODE 3. AND G ~~H~~.2 Be in MODE 4.	 12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.1.1	---NOTE--- Not required to be met if SR 3.7.1.5 and SR 3.7.1.8 satisfied. ------ Verify the water temperature of the intake tunnels is ≥ 38°F.	12 hours
SR 3.7.1.2	Verify the water level in the SW pump intake bay is ≥ 233.1 ft.	24 hours
SR 3.7.1.3	Verify the water temperature of each SW subsystem supply header is ≤ ~~82~~ 84°F.	24 hours AND 4 hours when supply header water temperature is ≥ ~~75~~ 78°F ~~AND~~ ~~2 hours when supply header water temperature is ≥ 79°F~~
SR 3.7.1.4	Verify each required SW pump is in operation.	24 hours

(continued)

ATTACHMENT (3)

CHANGES TO TECHNICAL SPECIFICATIONS

BASES PAGES (MARK-UP)

The current versions of Technical Specifications Bases pages B 3.7.1-1 through B 3.7.1-10 have been marked-up by hand to reflect the proposed changes. These Bases pages are provided for information only and do not require NRC approval.

B 3.7 PLANT SYSTEMS

B 3.7.1 Service Water (SW) System and Ultimate Heat Sink (UHS)

BASES

BACKGROUND

The SW System is designed to provide cooling water for the removal of heat from unit auxiliaries, such as Residual Heat Removal (RHR) System heat exchangers, emergency diesel generator (DG) coolers, and room coolers for Emergency Core Cooling System equipment required for a safe reactor shutdown following a Design Basis Accident (DBA) or transient. The SW System also provides cooling to unit components, as required, during normal operation and shutdown conditions. During a loss of offsite power (LOOP) or loss of coolant accident (LOCA) coincident with a LOOP, the SW supply header cross connect valves (these valves are open to crosstie the supply headers of the two SW subsystems) are closed and the non-safety related equipment required for normal operation is isolated (both supply and return flow paths) from the SW System, and cooling is directed only to safety related equipment. However, if a partial LOOP occurs (i.e., one offsite circuit is lost, resulting in deenergization of either the Division 1 or Division 2 4.16 kV emergency bus), while the non-safety related equipment is still isolated, the SW supply header cross connect valves will not isolate. In addition, during the LOOP or LOCA/LOOP, one pump in each subsystem is restarted automatically in timed sequence (provided the associated pump discharge valve has automatically closed). If a pump fails to restart, a standby pump is started automatically to ensure one pump is running in each subsystem. During a LOCA (without a coincident LOOP), the SW pumps which are running remain in service (no SW pumps are automatically started on a LOCA signal), the SW supply headers remain crosstied (the SW supply header cross connect valves are not automatically closed), and the non-safety related loads are not isolated from the SW System.

The SW System consists of the UHS, two essential cooling water headers (subsystems A and B), and their associated pumps, piping, valves, and instrumentation. ~~The SW System is sized such that any three pumps will provide sufficient cooling capacity to support the required safety related systems during safe shutdown of the unit following a LOCA.~~ Subsystems A and B are redundant and service equipment in SW Divisions 1 and 2, respectively.

(continued)

(No changes to this page)

BASES

BACKGROUND (continued)

The UHS consists of Lake Ontario and the SW Intake and Discharge System. The SW Intake System includes the two intake structures, the Intake Deicer Heating System, and the SW pump intake bay. The UHS is capable of providing sufficient cooling for all SW System post LOCA cooling requirements for a 30 day period (Regulatory Guide 1.27, Ref. 1).

Cooling water is pumped from the SW pump intake bay of the UHS by the SW pumps to the essential components through the two main redundant supply headers (subsystems A and B). After removing heat from the components, the water is discharged to Lake Ontario via the SW pump discharge bay, the discharge tunnel, and the diffuser nozzles.

Subsystems A and B supply cooling water to redundant equipment required for a safe reactor shutdown. Additional information on the design and operation of the SW System and UHS along with the specific equipment for which the SW System supplies cooling water is provided in the USAR, Sections 9.2.1 and 9.2.5 and the USAR, Table 9.2-1 (Refs. 2, 3, and 4, respectively). The SW System is designed to withstand a single active failure, coincident with a loss of offsite power, without losing the capability to supply adequate cooling water to equipment required for safe reactor shutdown.

Following a DBA or transient, the SW System will operate automatically without operator action.

APPLICABLE SAFETY ANALYSES

Sufficient water inventory is available for all SW System post LOCA cooling requirements for a 30 day period with no additional makeup water source available (Ref. 1). The ability of the SW System to support long term cooling of the reactor or containment is assumed in evaluations of the equipment required for safe reactor shutdown presented in the USAR, Sections 9.2.1, 6.2, and 6.3, Chapter 15, and Appendix A (Refs. 2, 5, 6, 7, and 8 respectively). These analyses include the evaluation of the long term primary containment response after a design basis LOCA. The SW System provides cooling water for the RHR suppression pool cooling mode to limit suppression pool temperature and primary containment pressure following a LOCA. This ensures that the primary containment can perform its intended function of limiting the release of radioactive materials to the environment following a LOCA. The SW System also

(continued)

BASES

RHR pump seal coolers, control building chillers, and safety-related area coolers

APPLICABLE SAFETY ANALYSES (continued)

provides cooling to other components assumed to function during a LOCA (e.g., ~~RHR and Low Pressure Core Spray Systems~~). Also, the ability to provide onsite emergency AC power is dependent on the ability of the SW System to cool the DGs.

(without a coincident LOOP)

The safety analyses for long term containment cooling were performed, as discussed in the USAR, Section 6.2.2 (Ref. 9), for a LOCA, and a LOCA concurrent with a LOOP. The worst case single failure affecting the performance of the SW System during a LOCA/LOOP is the failure of the Division 1 or 2 standby DG, which would in turn affect one SW subsystem. The analysis shows that two SW pumps in one subsystem are adequate to perform the long term containment cooling function (one SW pump is automatically started and is sufficient for the first 10 minutes of the accident sequence, while a second SW pump is manually started 10 minutes into the accident sequence and is necessary to meet the long term cooling requirements). ¶ The worst case single failure affecting performance of the SW System during a LOCA is the failure of one of the operating SW pumps. This is the most limiting analysis since the non-safety related loads are not automatically isolated during a LOCA. The analysis shows that, for SW supply header water temperature ≤ 82°F, three SW pumps (the SW pumps can be in one subsystem since the SW supply headers must be crosstied) are adequate to perform the long term containment cooling function (three pumps remain running when the accident occurs and are sufficient for the first 10 minutes of the sequence, while the non-safety related equipment is manually isolated 10 minutes into the accident sequence to meet the long term cooling requirements). When SW supply header water temperature is > 82°F and ≤ 84°F, four SW pumps are required to ensure sufficient SW flow to the control building chillers to meet accident analysis assumptions. ¶ The SW flow assumed in the analyses is 7400 gpm to the RHR heat exchanger (USAR, Table 9.2-1A, Ref. 4). Reference 2 discusses SW System performance during these conditions. The UHS is also assumed in these analyses. ~~The analyses assumed the UHS maximum temperature is 82°F and the minimum SW pump intake bay water level is 233.1 ft. In addition,~~ Both intake structures are assumed, with 14 intake deicer heaters OPERABLE and in operation in each intake structure. The required number of intake deicer heaters ensures that the necessary intake structure suction area is available during both a LOCA and a LOCA/LOOP. During a LOCA/LOOP, 14 heaters are available in one division (assuming a DG failure) per intake structure to support the two required SW pumps. During a LOCA, 14 heaters are available in each division (since power is not lost) per intake structure to support the three required pumps. Therefore, the LOCA/LOOP is the most limiting condition for

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

the intake deicer heater requirements. In addition, 14 heaters per intake structure will also ensure sufficient intake structure suction area is available during normal operations.

The SW System, together with the UHS, satisfy Criterion 3 of Reference 10.

LCO

The OPERABILITY of subsystem A (Division 1) and subsystem B (Division 2) of the SW System is required to ensure the effective operation of the RHR System in removing heat from the reactor, and the effective operation of other safety related equipment during a DBA or transient. Requiring both subsystems to be OPERABLE ensures that either subsystem A or B will be available to provide adequate capability to meet cooling requirements of the equipment required for safe shutdown in the event of a single failure. The OPERABILITY requirements for the SW System are dependent on the SW supply header water temperature, as follows:

Insert A

~~A subsystem is considered OPERABLE when:~~

~~a. Two pumps are OPERABLE; and~~

~~b. The associated piping, valves (including the SW supply header cross connect valve and non-safety related supply and return isolation valves), instrumentation, and controls required to perform the safety related function are OPERABLE. In addition, the SW supply header cross connect valve must also be open to be OPERABLE.~~

OPERABILITY of the UHS is based on a maximum water temperature of ~~82~~ 84°F, a minimum SW pump intake bay water level of 233.1 ft mean sea level, and 14 intake deicer heaters (of the 21 installed) OPERABLE (which includes being in operation) per division in each intake structure, when the intake tunnel water temperature is < 38°F.

The isolation of the SW System to components or systems may render those components or systems inoperable, but does not affect the OPERABILITY of the SW System.

Moved to Insert A

~~Four SW pumps are required to be in operation since the SW pumps do not receive an automatic start on a LOCA signal. There are no restrictions as to the allowed combinations of operating SW pumps (i.e., two SW pumps in each subsystem or~~

(continued)

INSERT A (for TS Bases Page B 3.7.1-4)

a. For SW supply header water temperature ≤ 82°F:

   A subsystem is considered OPERABLE when:

   1. Two pumps are OPERABLE; and

   2. The associated piping, valves (including the SW supply header cross connect valve and non-safety related supply and return isolation valves), instrumentation, and controls required to perform the safety related function are OPERABLE. In addition, the SW supply header cross connect valve must also be open to be OPERABLE.

   Four SW pumps are required to be in operation since the SW pumps do not receive an automatic start on a LOCA signal. There are no restrictions as to the allowed combinations of operating SW pumps (i.e., two SW pumps in each subsystem or three SW pumps in one subsystem and one SW pump in the other subsystem are allowed), since any combination of four operating SW pumps will meet the accident analysis assumptions.

b. For SW supply header water temperature > 82°F and ≤ 84°F:

   A subsystem is considered OPERABLE when:

   1. Either two or three pumps are OPERABLE, provided a total of five SW pumps are OPERABLE; and

   2. The associated piping, valves (including the SW supply header cross connect valve and non-safety related supply and return isolation valves), instrumentation, and controls required to perform the safety related function are OPERABLE. In addition, the SW supply header cross connect valve must also be open to be OPERABLE.

   In this case, five SW pumps are required to be in operation. There are no restrictions as to the allowed combinations of operating SW pumps, since any combination of five operating SW pumps will meet the accident analysis assumptions. Prior to the SW supply header water temperature exceeding 82°F, pre-planned actions are taken to manage SW system flow rates and heat loads, and the minimum required SW flow rate to the control building chillers is verified. These actions ensure that sufficient SW flow to the control building chillers is available to meet accident analysis assumptions.

BASES

Moved to Insert A

LCO (continued)

~~three SW pumps in one subsystem and one SW pump in the other subsystem are allowed), since any combination of four operating SW pumps will meet the accident analysis assumptions.~~

APPLICABILITY

In MODES 1, 2, and 3, the SW System and UHS are required to be OPERABLE to support OPERABILITY of the equipment serviced by the SW System and UHS, and are required to be OPERABLE in these MODES.

In MODES 4 and 5, the OPERABILITY requirements of the SW System and UHS are determined by the systems they support and therefore, the requirements are not the same for all facets of operation in MODES 4 and 5. Thus, the LCOs of the systems supported by the SW System and UHS will govern SW System and UHS OPERABILITY requirements in MODES 4 and 5.

ACTIONS

A.1 and A.2

If one SW supply header cross connect valve is inoperable due to being closed, an assumption of the LOCA analysis is not met. Therefore, the SW supply header cross connect valve must be opened within 1 hour. The 1 hour Completion Time provides a period of time to correct the problem and takes into account the low probability of a LOCA occurring during this time. If one SW supply header cross connect valve is inoperable due to being incapable of automatically closing, the remaining OPERABLE SW supply header cross connect valve is adequate to ensure the two Divisions can be split, thus ensuring the SW heat removal function is maintained during a LOOP or LOOP/LOCA. However, the overall reliability is reduced because a single failure of the OPERABLE SW supply header cross connect valve could result in loss of the SW function during a LOOP or LOOP/LOCA. Therefore, the SW supply header cross connect valve must be restored to OPERABLE status within 72 hours. The 72 hour Completion Time was developed taking into account the redundant capabilities afforded by the OPERABLE SW supply header cross connect valve and the low probability of a LOOP or LOOP/LOCA occurring during this period.

(continued)

(No changes to this page)

BASES

ACTIONS (continued)

B.1

When one or more non-safety related SW flow paths (i.e., the two supply and two return flow paths) have one SW isolation valve that is inoperable, the remaining OPERABLE SW isolation valve in each affected non-safety related SW flow path is adequate to ensure the non-safety related flow paths can be isolated from the safety related flow paths, thus ensuring the SW heat removal function is maintained. However, the overall reliability is reduced because a single failure of the OPERABLE SW isolation valve in an affected non-safety related flow path could result in loss of the SW function during a LOOP or LOOP/LOCA. Therefore, the affected non-safety related flow path(s) must be isolated within 72 hours. Isolating the affected non-safety related flow path(s) is acceptable since this action performs the function of the SW isolation valves. The 72 hour Completion Time was developed taking into account the redundant capabilities afforded by the OPERABLE SW isolation valve in each affected non-safety related flow path and the low probability of a LOOP or LOOP/LOCA occurring during this period.

C.1

If one SW subsystem is inoperable for reasons other than Conditions A and B (e.g., one or two required SW pumps inoperable in one subsystem), it must be restored to OPERABLE status within 72 hours. With the unit in this condition, the remaining OPERABLE SW subsystem is adequate to perform the heat removal function. However, the overall reliability is reduced because a single failure in the OPERABLE SW subsystem could result in a loss of the SW function. The 72 hour Completion Time was developed taking into account the redundant capabilities afforded by the OPERABLE subsystem and the low probability of a DBA occurring during this period.

D.1

If one division of intake deicer heaters is inoperable, it must be restored to OPERABLE status within 72 hours. With the unit in this condition, the remaining OPERABLE deicer heater division is adequate to ensure both intake structures

(continued)

BASES

ACTIONS

D.1 (continued)

remain free of ice blockage, thus ensuring the UHS is adequate to perform the heat removal function. However, the overall reliability is reduced because a single failure in the OPERABLE intake deicer heater division could result in loss of the UHS function during a DBA. The 72 hour Completion Time was developed taking into account the redundant capabilities afforded by the OPERABLE intake deicer heater division and the low probability of a DBA occurring during this period.

E.1

If one required SW pump is not in operation, it must be restored to operation within 72 hours. With the unit in this condition, the remaining operating SW pumps are adequate to perform the heat removal function. However, the overall reliability is reduced because a single failure of a remaining operating pump could result in loss of the SW function during a DBA LOCA. The 72 hour Completion Time was developed taking into account the redundant capabilities afforded by the operating pumps and the low probability of a DBA LOCA occurring during this period.

F.1

all but one of the required

If two or more required SW pumps are not in operation, ~~three~~ SW pumps must be in operation within 1 hour. The 1 hour Completion Time provides a period of time to correct the problem and is consistent with the 1 hour provided in LCO 3.0.3. This time period also takes into account the low probability of a DBA LOCA occurring during this time.

~~G.1 and G.2~~

~~With the water temperature of the UHS (as measured at the SW subsystem supply headers) > 82°F and ≤ 84°F, the design basis assumptions associated with initial UHS temperature remain bounded, provided that the temperature of the UHS averaged over the previous 24 hour period is ≤ 82°F and five SW pumps are in operation.~~

(continued)

BASES

ACTIONS

~~G.1 and G.2 (continued)~~

~~With the water temperature of the UHS > 82°F, long term cooling capability of the emergency core cooling system loads, DGs, and other components may be affected. Therefore, to ensure long term cooling capability is provided to these loads when water temperature of the UHS is > 82°F, Required Action G.1 is provided to more frequently monitor the water temperature of the UHS and verify the temperature is ≤ 82°F when averaged over the previous 24 hour period. The once per hour Completion Time takes into consideration UHS temperature variations and the increased monitoring frequency needed to ensure design basis assumptions and equipment limitations are not exceeded in this condition. If the water temperature of the UHS exceeds 82°F when averaged over the previous 24 hour period or the water temperature of the UHS exceeds 84°F, Condition H must be entered immediately.~~

~~To ensure sufficient SW flow to the control building chillers to meet accident analysis assumptions when the initial UHS temperature is > 82°F and ≤ 84°F, operation of four SW pumps is required. To meet the single failure criterion, Required Action G.2 is provided to place a fifth SW pump in operation. The Completion Time of 1 hour provides a period of time to place the required number of SW pumps in operation and is consistent with the one hour provided in LCO 3.0.3. This time period also takes into account the low probability of a DBA LOCA occurring during this time. If a fifth SW pump cannot be placed in service within the Completion Time, Condition H must be entered immediately.~~

G.1 and G.2

If any Required Action and associated Completion Time of Condition A, B, C, D, E, or F ~~or G~~ are not met, or both SW subsystems are inoperable for reasons other than Conditions A, B, and C, or the UHS is inoperable for reasons other than Condition D ~~or G~~, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours and in MODE 4 within 36 hours.

(continued)

BASES

ACTIONS

G.1 and G.2 (continued)

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

The Required Actions are modified by a Note indicating that the applicable Conditions of LCO 3.4.9, "Residual Heat Removal (RHR) Shutdown Cooling System — Hot Shutdown," be entered and the Required Actions taken if the inoperable SW System or UHS results in an inoperable RHR shutdown cooling subsystem. This is in accordance with LCO 3.0.6 and ensures the proper actions are taken for the RHR Shutdown Cooling System.

SURVEILLANCE REQUIREMENTS

SR 3.7.1.1

Verification that the water temperature of the intake tunnels is ≥ 38°F ensures that frazil ice, which can block the intake tunnels, cannot form. This ensures that the intake tunnels can perform their intended function. This Surveillance is only required to be met when SR 3.7.1.5 and SR 3.7.1.8 are not satisfied. With the Intake Deicer Heater System OPERABLE (and SR 3.7.1.5 and SR 3.7.1.8 met), frazil ice cannot form even with the intake tunnels water temperature < 38°F. The 12 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES.

SR 3.7.1.2

This SR verifies the water level in the SW pump intake bay to be sufficient for the proper operation of the SW pumps (net positive suction head and pump vortexing are considered in determining this limit). The water level limit, 233.1 ft, is referenced to mean sea level. The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES.

SR 3.7.1.3

Verification of each SW subsystem supply header temperature ensures that the heat removal capability of the SW System is within the assumptions of the DBA analysis. The 24 hour Frequency is based on

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.1.3 (continued)

operating experience related to trending of the parameter variations during the applicable MODES. However, if a SW subsystem supply header water temperature is ≥ 78°F, the Surveillance must be performed more frequently (every 4 hours ~~if ≥ 75°F and every 2 hours if ≥ 79°F~~), since the condition is closer to the maximum water temperature limit.

SR 3.7.1.4

Verification that each required SW pump is in operation ensures that an adequate number of SW pumps are operating to perform the long term containment cooling function during a LOCA. The 24 hour Frequency is based on operating experience and the operator's inherent knowledge of plant status, including changes in SW pump operating status.

SR 3.7.1.5

The current for each required heater feeder cable is required to be checked to ensure the proper number of heaters are OPERABLE for each intake deicer heater division. The Surveillance is performed by verifying, at the motor control centers, that the current is ≥ 20 amps (total for all three phases when adjusted to degraded voltage conditions, i.e., 518 volts) in each intake structure for each division. The current limit is based upon ensuring 14 heaters are OPERABLE (which includes in operation) in an intake structure. This Surveillance is only required to be met when SR 3.7.1.1 is not satisfied, since with the intake tunnels water temperature ≥ 38°F (i.e., SR 3.7.1.1 met), frazil ice cannot form even with the intake deicer heaters inoperable. The 7 day Frequency is based on operating experience that has shown that these components usually pass this Surveillance when performed at this Frequency.

SR 3.7.1.6

Verifying the correct alignment for each manual, power operated, and automatic valve in each SW subsystem flow path provides assurance that the proper flow paths will exist for SW operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves were verified to be in the correct position prior to locking, sealing, or securing. A valve is also allowed to be in the nonaccident

(continued)