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10 CFR 50.90

August 8, 2016
Serial: HNP-16-056

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Shearon Harris Nuclear Power Plant, Unit 1
Docket No. 50-400
Renewed License No. NPF-63

Subject: Response to Second Request for Additional Information Regarding License Amendment Request for Temporary Changes to Technical Specifications for the 'A' Emergency Service Water Pump Replacement

Ladies and Gentlemen:

By letter dated October 29, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15302A542), Duke Energy Progress, Inc. (Duke Energy), requested a license amendment for the Technical Specifications (TS) for the Shearon Harris Nuclear Power Plant, Unit 1 (HNP) to allow temporary changes to TS 3.1.2.4, “Charging Pumps – Operating,” TS 3.5.2, “ECCS [Emergency Core Cooling Systems] Subsystems – Tavg Greater Than or Equal To 350°F,” TS 3.6.2.1, “Containment Spray System,” TS 3.6.2.2, “Spray Additive System,” TS 3.6.2.3, “Containment Cooling System,” TS 3.7.1.2, “Auxiliary Feedwater System,” TS 3.7.3, “Component Cooling Water System,” TS 3.7.4, “Emergency Service Water System,” TS 3.7.6, “Control Room Emergency Filtration System,” TS 3.7.7, “Reactor Auxiliary Building (RAB) Emergency Exhaust System,” TS 3.7.13, “Essential Services Chilled Water System,” and TS 3.8.1.1, “AC [Alternating Current] Sources – Operating.” The proposed license amendment requested will permit the 'A' Emergency Service Water (ESW) pump to be inoperable for 14 days to allow for the replacement of the ‘A’ Train ESW pump with design upgrades to improve reliability. The 14 days were requested to be taken consecutively no later than December 31, 2016.

The NRC staff reviewed the request and determined that additional information was needed to complete their review. Duke Energy provided a response to requests for additional information (RAIs) from the NRC per letter dated February 16, 2016 (ADAMS Accession No. ML16047A389). Subsequently, the NRC determined a second RAI is needed in order to complete their review. Duke Energy received this second RAI from the NRC through electronic mail on July 7, 2016. The NRC also provided the second RAI by a letter dated August 2, 2016 (ADAMS Accession number ML16209A264). Response to this RAI is required by August 8, 2016.

A change in the expiration date from December 31, 2016 to March 31, 2018 for the requested 14-day allowed outage time is proposed within this submittal. Attachment 1 provides Duke

Energy's responses to the supplemental RAI questions. In response to the RAI, the proposed TS changes and TS Bases changes provided in the Duke Energy letter dated February 16, 2016 were updated as described in Attachment 1. Attachment 2 provides a copy of the proposed TS changes. Attachment 3 provides a copy of the revised TS pages. Attachment 4 provides a copy of the proposed TS Bases changes, which includes the conditions associated with the one-time TS change. Attachment 5 provides a simplified flow diagram of the circulating and service water systems to support information provided in Attachment 1.

In accordance with 10 CFR 50.91(b), HNP is providing the state of North Carolina with a copy of this response.

This letter contains new conditions within Attachment 4, which are identified as items 16 and 17 in the proposed TS Bases changes.

Should you have any questions regarding this submittal, please contact John Caves, Manager – Regulatory Affairs, at (919) 362-2406.

I declare under penalty of perjury that the foregoing is true and correct. Executed on August 8, 2016.

Sincerely,

Benjamin C. Waldrep

Attachments:

1. Response to Request for Additional Information
2. Proposed Technical Specification Changes
3. Revised Technical Specification Pages
4. Proposed Technical Specification Bases Changes
5. Simplified Flow Diagram of the Circulating and Service Water Systems

cc: Mr. M. Riches, NRC Sr. Resident Inspector, HNP
Mr. W. L. Cox, III, Section Chief, N.C. DHSR
Ms. M. Barillas, NRC Project Manager, HNP
NRC Regional Administrator, Region II

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SERIAL HNP-16-056

ATTACHMENT 1

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

DOCKET NO. 50-400

RENEWED LICENSE NUMBER NPF-63

By letter dated October 29, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15302A542), Duke Energy Progress, Inc. (Duke Energy), requested a license amendment for the Technical Specifications (TS) for the Shearon Harris Nuclear Power Plant, Unit 1 (HNP) to allow temporary changes to TS 3.1.2.4, "Charging Pumps – Operating," TS 3.5.2, "ECCS [Emergency Core Cooling Systems] Subsystems – Tavg Greater Than or Equal To 350°F," TS 3.6.2.1, "Containment Spray System," TS 3.6.2.2, "Spray Additive System," TS 3.6.2.3, "Containment Cooling System," TS 3.7.1.2, "Auxiliary Feedwater System," TS 3.7.3, "Component Cooling Water System," TS 3.7.4, "Emergency Service Water System," TS 3.7.6, "Control Room Emergency Filtration System," TS 3.7.7, "Reactor Auxiliary Building (RAB) Emergency Exhaust System," TS 3.7.13, "Essential Services Chilled Water System," and TS 3.8.1.1, "AC [Alternating Current] Sources – Operating." The proposed license amendment requested will permit the 'A' Emergency Service Water (ESW) pump to be inoperable for 14 days to allow for the replacement of the 'A' Train ESW pump with design upgrades to improve reliability.

The NRC staff reviewed the request and determined that additional information was needed to complete their review. Duke Energy provided a response to requests for additional information (RAIs) from the NRC per letter dated February 16, 2016 (ADAMS Accession number ML16047A389). Subsequently, the NRC determined a second RAI was needed in order to complete their review. Duke Energy received the second RAI from the NRC through electronic mail on July 7, 2016. The NRC also provided the second RAI by a letter dated August 2, 2016 (ADAMS Accession number ML16209A264). Response to this RAI is required by August 8, 2016. Duke Energy provides the following response to the supplemental RAI. There are no changes to the information provided in the significant hazards consideration within the license amendment request (LAR) submitted on October 29, 2015, because of this RAI response.

A change in the expiration date from December 31, 2016 to March 31, 2018 for the requested 14-day allowed outage time is proposed within this submittal. This new date is shown in the proposed TS changes, the revised TS pages, and the proposed TS Bases changes within Attachments 2, 3, and 4, respectively.

RAI-1:

In its LAR, Duke Energy provided analyses that demonstrated, during the proposed 14-day allowed outage time (AOT) to allow maintenance on a train of ESW, Harris could start the 'A' emergency diesel generator (EDG) within approximately 1 hour after a postulated design basis loss of offsite power (LOOP) with a single failure and then perform the safety function of decay heat removal. In addressing decay heat removal, the licensee responded to RAI-EEEB-2 describing a process that will allow the reactor to cool down to hot shutdown, which can be sustained for an extended time period. However, the licensee should provide more information on the licensee's process of decay heat removal and plant stability.

a. Considering an extended LOOP, provide an evaluation for how long the reactor can be maintained in hot shutdown. Further, describe how and when the capability to achieve cold shutdown using residual heat removal is achieved, including how service water is supplied to the component cooling water heat exchangers.

b. Demonstrate that there is sufficient capability in the completion time maintenance configuration to ensure that pressurizer levels are maintained at acceptable levels, including

the prevention of water relief through the pressurizer power operated relief valves and primary system voiding. Specifically address the availability of primary inventory controls in the discussion.

c. Demonstrate that the FLEX pump will reliably perform its intended compensatory defense-in-depth safety function of supplying service water to the operating EDG and other essential loads during a LOOP with a single failure, including:

   i. Describe the ESW flow path to the operating EDG and other essential loads using the FLEX pump. Include a description of valve repositioning(s) necessary to support the cooling water lineup, including the valve manipulation(s) necessary to ensure water inventory only goes to the intended loads, and the estimated time needed to accomplish the lineup.

   ii. Provide the results of analyses or testing performed to demonstrate that FLEX cooling inventory loss expected due to leakage past the repositioned valves and back leakage via the ESW/Nuclear Service Water pump discharge check valves would not impair the ability of the FLEX pump to perform its intended compensatory defense-in-depth safety function of providing sufficient cooling flow to the loads assumed in this LAR.

   iii. Describe the alignment and flow testing that will be performed or has been performed prior to starting the ‘A’ ESW pump replacement maintenance activity, which verifies the FLEX pump provides the required flow to the operating EDG and other required loads. Any testing performed should demonstrate that the FLEX pump hook up and associated system lineup could be accomplished within the 1 hour credited in the LAR.

   iv. Assuming an extended LOOP, provide the following information:

      (A) Identify all ESW cooling loads that will not be receiving service water during this event.

      (B) Explain whether these loads will be secured or are credited to continue operating.

      (C) Provide a justification for why these loads are either not necessary during this event or why they can be credited to continue performing their design basis safety function without ESW cooling.

      (D) The LAR appears to indicate that heating, ventilation, and air conditioning (HVAC) will not be supplied to necessary equipment rooms including the EDG building. Provide a discussion on how the EDG building HVAC will be cooled since an EDG will be operating for an extended period.

      (E) Considering the probabilistic risk assessment does not evaluate an event beyond a 24-hour mission time, discuss the heating effects on equipment rooms including the OPERABILITY of associated electrical switchboards, batteries, and their associated loads beyond 24 hours after the LOOP.

(F) Demonstrate sufficient safety related containment cooling and spent fuel pool cooling will be maintained during this design basis event.

HNP Response:

a. In the event of a LOOP, the plant would immediately be brought to shutdown, either automatically by design or by operators in accordance with plant procedures. In the event of a failure of a TS required 'B' Train system, structure, or component (SSC), TS require restoring the failed component within one hour (two hours is permitted in the case of the EDG) or shutting down the plant within the next six hours.

Operation in Mode 3 (Hot Standby) and Mode 4 (Hot Shutdown) would be supported using the turbine-driven auxiliary feedwater (TDAFW) pump to supply the feedwater to the steam generators from the condensate storage tank (CST) immediately, and within an hour, the 'A' EDG and motor-driven auxiliary feedwater (AFW) pump would be functional to provide redundant cooling capability. After one hour, the FLEX ESW pump would be able to provide design-basis cooling water flow to select loads to transition the plant to hot shutdown. An evaluation of hot shutdown feed water requirements, FLEX ESW pump requirements, and heat loads that would be supported in hot shutdown for this scenario is provided below.

The 'A' ESW pump replacement activity involves removing the existing pump, installing the replacement pump, installing vibration monitoring instrumentation, then post maintenance testing to restore operability of the 'A' ESW pump, 'A' EDG, and the balance of 'A' Train SSCs.

In the event of either a LOOP or failure of a required 'B' Train SSC during the installation of the replacement pump, the installation process would be continued. However, installation of the vibration monitoring instrumentation and other optional scope would be eliminated. The remaining maintenance time would then not exceed 4 days and 16 hours. Within 4 hours from the time maintenance is completed on the 'A' ESW pump and it is turned over to Operations, the pump will be ready to begin cooling the 'A' ESW Train. The 4-hour timeframe provides sufficient margin for the necessary operator actions to be completed. At that time, the full ESW capabilities would be available to restore 'A' Train safety function including residual heat removal, which would support a transition to cold shutdown.

Hot Shutdown Feed Water Requirements: Sufficient feedwater-quality water volume is immediately available to maintain the plant in hot shutdown conditions for five days. There is sufficient CST volume to supply AFW for 36 hours after a non-seismic, extended LOOP event. CST level is normally at least 80% or 298 ft and would be maintained at this level for the 'A' ESW pump replacement activity. The CST would be refilled from the condenser hotwell or the Demineralized Water Storage Tank (DWST) as necessary to maintain the feedwater supply for hot shutdown. The DWST is the preferred backup to the CST make-up source. The normal water level in the DWST varies between 20 feet (ft) and 34 ft. DWST will be kept between 29 ft and 34 ft to support the 'A' ESW pump replacement activity, which is a new condition established for the proposed AOT. This new condition is shown in the TS Bases markup provided in Attachment 4 of this submittal. A level of 29 ft was assumed for the available volume estimate to support CST refill, which allows several feet of working margin. The available volume was determined to be approximately 358,000 gallons. This is sufficient to supply the CST with water from 36 hours to five days.

The estimated available hotwell volume is 92,000 gallons. Thus, there is additional volume available from the hotwell if needed. The FLEX DWST and FLEX hotwell transfer pumps would be used to transport water to the CST as necessary and have sufficient capability to meet AFW demand during this time.

FLEX ESW Pump Requirements: The FLEX ESW pump will be able to provide:

- 800 gallons per minute (gpm) to the 'A' EDG jacket water heat exchanger. This is the minimum required design flow rate assuming 10% tube plugging.
- 20 gpm to the 'A' Charging and High-Head Safety Injection pump (CSIP) oil and gear coolers. This is the minimum required design flow rate assuming 10% tube plugging.
- 45 gpm to the 'A' Air Compressor. This is the required design flow rate for the after-coolers. Compressed air is required to support inventory control equipment and for normal plant cooldown.
- Limited flow to the 'A' Component Cooling Water (CCW) heat exchanger – see additional analysis summarized below.

The combined flow requirement for the first three items above is 865 gpm. The flow available to the CCW heat exchanger (HX) is described below.

Under normal plant conditions, the FLEX ESW pump is capable of establishing a flow of 2,100 gpm. At 2,100 gpm under normal conditions, there is positive net positive suction head (NPSH) margin available. Based on this, there would be approximately 1,235 gpm of additional flow capacity available for the CCW HX and to make up for boundary leakage.

The ESW FLEX connections are 10 inch (") lines with 12" flanged connections (reducers). The pressure drop through the FLEX ESW pump suction lines and through the 10" FLEX supply connection plus the 12" FLEX ESW pump discharge hose and strainer is about 33 ft at 2,200 gpm. Pressure drop through the ESW supply header will be negligible. This is a large 30" pipe that normally flows at approximately 18,000 gpm as compared to 2,100 gpm.

The pressure drops across the 'A' EDG, the 'A' CSIP coolers, and the 'A' CCW HX were evaluated (pressure drops are in parallel). The most limiting pressure drop was determined to be for the 'A' CSIP supply, requiring 61 pounds per square inch (psi) or 141 ft. Total pressure drop through the system is therefore approximately 174 ft at around 2,200 gpm.

The FLEX ESW pump curve shows that it is capable of developing 580 ft at a flow rate of 2,200 gpm at a rated engine speed of 2,100 revolutions per minute (rpm). Therefore, the FLEX ESW pump will be more than capable of delivering 2,100 gpm. Relief valves and procedural controls are available to limit engine speed and discharge pressure to ensure that the nominal ESW system pressure rating of 150-psi gauge (psig) is not exceeded.

Heat Loads: As noted above, there will be approximately 1,235 gpm of FLEX ESW pump flow available for the CCW HX and to make up for boundary leakage. Some of this flow can supply the CCW HX to provide cooling to the spent fuel pools (SFPs) and the letdown HX. The ability of the CCW HX to cool these two loads during the time that the 'A' ESW pump is not functional was evaluated as summarized below.

A calculation (available for audit) that provides predicted decay heat loads for the 'A', 'B', and 'C' SFPs as a function of time was used to approximate the SFP heat load. The

maximum predicted combined heat load for the 'A', 'B', and 'C' SFPs is approximately 22.0 mega British thermal units per hour (MBtuh).

The letdown HX heat load was calculated to be approximately 2.78 MBtuh. Therefore, the total required heat capacity of the CCW HX under the assumed conditions is approximately 24.8 MBtuh.

An analysis of ESW flow concluded that approximately 1,100 gpm at 95 °F is required to transfer 25 MBtuh from the CCW HX. This would provide sufficient cooling to maintain SFP temperature, cool the letdown HX, and still have approximately 135 gpm of pump capacity available to make up for system leakage. Based on satisfactory periodic inspections of boundary isolation valves in accordance with the Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment," program that is implemented through a plant procedure, 135 gpm is expected to be sufficient to account for any boundary valve leakage.

b. Emergency operating procedure, EOP-ECA-0.0, "Loss of All AC Power," is the procedure utilized by Operations when power is lost to both the 'A' and 'B' emergency busses (available for audit). For the scenario in which 'A' EDG is available but must be started manually due to the 1A-ESW pump replacement in progress and a simultaneous LOOP and 'B' EDG failure occur, EOP-ECA-0.0 will be in use for the first hour. The Operations crew will determine that short-term recovery of AC power from a diesel generator is expected within 4 hours (this determination impacts whether guidance for an extended loss of AC power (ELAP) would be used). This is based upon the pre-established contingency plan to start the FLEX ESW pump within one hour to pressurize the 'A' ESW Header. The emergency operating procedure then directs the crew to check for proper alternate seal injection (ASI) pump operation, maintain/control pressurizer level, and initiate cooldown using steam generator pressurizer power operated relief valves (PORVs).

   In summary, pressurizer (PZR) water level is controlled at a value less than 75% to prevent water release from the PORVs and greater than 25% to prevent voiding. Prior to restoration of the 'A' EDG supplying 'A' emergency bus, this is accomplished by controlling reactor coolant system (RCS) temperature and ASI pump operation. After restoration, PZR level control is accomplished by normal charging and letdown flow adjustment with the Refueling Water Storage Tank (RWST) as the initial primary make-up source. If it is necessary, additional make-up sources are available from the ASI Tank, Boric Acid Tank (BAT), and the Reactor Makeup Water Storage Tank (blended with boron and delivered to BAT or RWST).

   Relevant steps and notes from the emergency operating procedure include the following:

   Note: With RCS temperature stable, PRZ level will rise slowly (approximately 0.5% each MINUTE) with the ASI pump in service

   Step 32. Monitor PRZ Level Trend AND prepare For RCS Cooldown While Continuing With This Procedure
   - Check PRZ Level - LESS THAN 75% [60%] if not then go to step 33

   Note: The RCS cooldown rate should be controlled to maintain PRZ level as stable as practical. With RCS temperature near no-load, a cooldown rate of approximately

20°F/HR should offset the mass addition from the ASI pump. The RCS cooldown rate to maintain stable PRZ level drops as RCS temperature drops.

Step 33. Initiate RCS Cooldown To Control PRZ Level:
- Maintain cooldown rate in RCS cold legs - LESS THAN 50°F/HR
- Maintain PRZ level – BETWEEN 25% AND 75% [40% AND 60%]
- Dump steam using all intact SG PORVs [performed locally]*:*

Note: After the RCS cooldown is completed, wide range cold leg temperatures should be maintained between 370°F and 400°F. Below 400°F, minimal RCP seal leakage will occur after the ASI pump is secured in Step 35. Above 370°F, SG pressures will remain above that required to maintain the TDAFW pump operational (160 PSIG). The saturation pressures for 370°F and 400°F are approximately 160 PSIG and 230 PSIG respectively.

Summarization of Step 34. Stop cooldown when all RCS temperatures are between 370 and 400 degrees

Summarization of Step 35. Secure ASI Pump per OP-185 (OP-185 is available for audit)

Note from before Step 38: RCS cooldown should be commenced within 2 HOURS of a loss of ALL RCP seal cooling to protect the No. 2 seal. RCS cold leg temperature should be less than 450°F within 4 HOURS of the loss of cooling, and RCS temperature and pressure should be less than 350°F and 400 PSIG within 24 HOURS. With no seal injection in service, reducing RCS pressure to less than 1710 PSIG within 2 HOURS minimizes the probability of RCP seal failure.

It is expected that after a LOOP, ASI will cause an increase in PZR level but a cooldown to around 400 °F can be performed to offset this. Once below 450 °F and 1710 psig, if PZR level gets to 75 %, the ASI pump will be secured.

After pressurizing the ‘A’ ESW header and starting the ‘A’ EDG (expected in one hour or less), the crew will transition to a different emergency operating procedure, EOP-ECA-0.1, “Loss of All AC Power Recovery without SI [Safety Injection] Required.” This procedure (available for audit) will start the ‘A’ CSIP if not already in operation to supply the RCP seals and secure the ASI pump. This procedure also starts the ‘A’ CCW pump and aligns flow to nonessential portion of the CCW header. Normal inventory control is established as well by starting the 1A Air Compressor to supply instrument air (IA). IA along with CCW and a CSIP in operation will allow letdown to be restored.

c.i. The valve lineup to accomplish this has been reviewed and personnel will be trained and available to execute the necessary isolations of other ‘A’ ESW loads, shown below, within a one-hour time frame. Attachment 5 of this submittal contains a simplified flow diagram of the circulating and service water systems that shows these valves for additional reference. Additional operator staff will be utilized. Operators will be trained and staged to support the necessary valve isolations. The ‘A’ EDG would be manually started to support the ‘A’ CSIP and ‘A’ AFW pump. The ‘A’ motor driven AFW pump and TDAFW pump will remove decay heat through the steam generators to transition the unit to hot shutdown.

Isolate (shut) normally-open 'A' ESW loads:

Load	**Action**
ESW Screenwash	Shut 1SW-35
ESW Pump Discharge	Shut 1SW-25 (will already be shut as part of 'A' ESW Pump replacement)
Normal (Non-Safety) Service Water Supply	Shut 1SW-39, 40 (check valve 1SW-50 will also provide isolation)
Normal (Non-Safety) Service Water Return	Shut 1SW-275, 274, 276
Post-Accident Sampling System Chiller	Shut 1SW-674, 675
Containment Fan Coolers	Shut 1SW-91, 92, 119
Essential Services (Safety) Chilled Water	Shut 1SW-57, 73
Component Cooling Water HX	Shut 1SW-58, 70 (will be opened later to provide SFP and letdown HX cooling)
ESW Return to Aux. Reservoir	Throttle 1SW-270 (need to throttle to keep ESW header pressurized)

Loads that are typically isolated during normal power operation that will remain isolated include the Boron Thermal Regeneration System (BTRS) chillers, AFW emergency supply, and the Charging and Safety Injection System Swing Pump.

Although not part of the initial one-hour actions, service water will be connected to the air compressor aftercooler 1A shortly after one hour to support RCS level control and transition to cold shutdown. Steps to make these connections include the following valves to be manipulated:

- Aftercooler SW Supply — Open — 1SW-134
- Aftercooler SW Return — Open — 1SW-104
- Normal Service Water (NSW) Supply Isolation — Unlock/Shut — 1SW-308
- NSW Return Isolation — Unlock/Shut — 1SW-346

c.ii. HNP has two FLEX ESW pumps that are performance-tested every three years. They are also run quarterly and annually for various durations to verify functionality. The pumps themselves are rated for 3,000 gpm at 150 psi at the rated speed of 2,100 rpm. This is greater than the flow credited for FLEX response or by the assumed flow rate for the LOOP

scenario postulated for the 'A' ESW pump replacement. However, pump flow is limited largely by the NPSH available. In the response to RAI-1.a, it was shown that there would be about 135 gpm of margin available beyond that required to support operation of the 'A' EDG, the 'A' CSIP, the 'A' CCW HX, and an air compressor aftercooler. This margin can account for system boundary leakage.

The largest boundary valves are the 'A' ESW pump discharge isolation valve, 1SW-25, and the NSW supply and return isolation valves, 1SW-39 and 1SW-275. 1SW-25 is a 30" manually operated (gear-operated) stainless-steel butterfly valve with a Tefzel seat that was replaced in refueling outage (RFO) -17 (the original carbon steel valve was replaced with a new stainless-steel valve). Given the construction of this valve, its recent installation, and the presence of the upstream check valve (1SW-9), it is reasonable to expect very little leakage back into the ESW Intake Structure.

The NSW supply and return isolation valves, 1SW-39 and 1SW-275, are 30" motor-operated stainless-steel butterfly valves with Tefzel seats. 1SW-39 was inspected, cleaned, and diagnostic testing performed (no leak testing) during RFO-19 in 2015. Check valve 1SW-50 is located upstream of 1SW-39 and provides some additional isolation from the NSW system. 1SW-275 had diagnostic testing (no leak testing) performed in RFO-19 and on-line during Cycle 20. There is also another butterfly valve, 1SW-276, of similar construction located downstream of 1SW-275 to provide additional isolation capability. Based on these details, no significant amount of leakage is expected past these boundaries.

c.iii. A calculation was performed for the FLEX ESW pump installation that outlines the ESW flow requirements that were evaluated (available for audit), however a field test was not performed based upon sensitivity to connecting non-safety FLEX equipment to a safety-related train. The response to RAI-1.a demonstrates that the FLEX ESW pump will provide sufficient flow to credited loads if needed in a LOOP scenario during the proposed AOT.

As discussed in RAI-1.c.i, pre-staging and training personnel and pre-staging equipment will allow the valve alignment and start of the FLEX ESW pump to be accomplished within one hour. The FLEX ESW pump itself has been fully tested at HNP as discussed in RAI-1.c.ii. The FLEX ESW pump and hoses will be pre-staged prior to the 'A' ESW pump work window and will be connected to the system in parallel with the valve alignments.

c.iv.A. The following loads will be isolated or will receive reduced ESW flow:

1. CCW	(reduced flow)
2. Reactor Auxiliary Building HVAC chillers	(isolated)
3. Containment fan coolers	(isolated)
4. Post-Accident Sample System (PASS)	(isolated)
5. ESW Screen Wash pumps	(isolated)
6. ESW Strainer Backwash	(isolated)

c.iv.B. All isolated ESW loads will be secured and are not credited for continued operation.

c.iv.C. The justification for why each load identified in response to RAI c.iv.A. may be isolated, is as follows:

1. CCW cooling load: AFW will be credited for maintaining the plant in hot shutdown until the 'A' ESW pump can be functionally restored and provide full flow to the CCW HX to

allow cooldown of the RCS and design-basis cooling to the SFPs. Prior to restoration of the 'A' ESW pump, the FLEX ESW pump can provide limited (less than design) flow to the CCW HX, which would provide SFP cooling and cooling for the letdown HX. Additional discussion of these loads is provided in the RAI-1.a. response.

2. RAB HVAC chillers: Justification for isolation of this load is provided in the RAI c.iv.E. response shown below.
3. Containment fan coolers: Justification for isolation of this load is provided in the RAI c.iv.F. response shown below.
4. PASS chiller supply line: The PASS is not used except to support long-term actions after a severe accident (i.e. LOCA), so isolating ESW to the PASS chiller has no impact on the 'A' ESW pump replacement strategy. Sampling through the Primary Sample System (PSS) will be required as a prerequisite to the use of residual heat removal (RHR) and cold shutdown. Cooling water to the PSS will be available upon restoration of the 'A' ESW pump.
5. ESW Screen Wash pumps: The 'A' ESW pump will be isolated for maintenance.
6. ESW Strainer Backwash: The 'A' ESW pump will be isolated for maintenance.

c.iv.D. The EDG engine rooms are cooled by exhaust fans that draw in outside air. These fans cool the engine rooms without the need for service water. The EDG electrical room is served by an air handler that provides once-through ventilation and does not require service water for cooling. Fan operation is verified during EDG operational checks. In summary, EDG building cooling will function as designed during restoration of the 'A' EDG.

c.iv.E. The heating effects on equipment rooms, including the associated electrical switchboards, batteries, and their associated loads after a LOOP event have been evaluated to consider temperatures over time. This evaluation considers a calculation previously developed to determine the impact of a loss of HVAC to the RAB under ELAP conditions, which considers all RAB elevations. The calculation assumptions are different for the proposed LOOP scenario associated with the 'A' ESW pump replacement, since the 'A' EDG would be recovered after one hour, allowing some 'A' Train components to be restored after one hour, such as the 'A' CSIP, the 'A' CCW pump, and the 'A' AFW motor-driven pump, all of which are located on RAB 236' elevation. This evaluation also considers a calculation previously developed to determine the impact of a loss of chilled water under normal and post-accident conditions.

A comparison of the heat loads from assumed running motors, initial ambient temperatures for each area, and the volume of air around equipment in operation was completed. A ventilation strategy for the CCW pump area (RAB 236' elevation) was identified as part of this evaluation for use as necessary, depending on the duration of the LOOP scenario.

CSIP room cooling will be accomplished by opening the 'A' CSIP room door and installing a temporary fan. The Switchgear Room 1A will be ventilated by propping open doors then placing a portable blower at the outdoor exhaust downstream of a damper. Battery Room doors will be opened within one hour of the LOOP. Hydrogen concentrations over the course of the LOOP scenario will not approach lower flammability limits with doors open. Main Control Room temperatures are not expected

to be extreme; however, forced air ventilation to the MCR is available in the event of high temperatures.

Based upon the evaluation of heating effects for a LOOP event and the equipment that would be in operation to maintain hot shutdown, expected temperatures in equipment rooms, including the associated electrical switchboards and batteries, would be within acceptable ranges for nearby equipment. It is concluded that the temperatures expected over the potential 4.7-day period in hot shutdown will be maintained within an acceptable range.

c.iv.F. Containment Cooling: The loss of cooling to the Reactor Containment Building (RCB) following an ELAP was considered in the evaluation of a loss of containment cooling for the proposed extended LOOP. It considers hot shutdown (350^{o}F) conditions from 12 hours to 10 days into the event and both cases are based on worst-case summertime conditions. The results indicate that peak containment pressure and peak temperature are well within values established for RCB equipment qualification. With consideration of the peak pressures and temperatures calculated for summertime conditions over a 10-day period, it is reasonable to assume that containment temperatures over the potential 4.7-day period in hot shutdown will be maintained within an acceptable range.

Spent Fuel Pool Cooling: RAI-1.a response identifies that there would be sufficient flow available to the CCW HX from the FLEX ESW pump to provide cooling for the SFPs. If, for any reason, the FLEX flow to the CCW HX assumed in the RAI-1.a analysis could not be achieved, SFP make-up requirements will be a long-term concern.

In the event of loss of cooling to the SFP during normal operations, the SFP would take a minimum of 26 hours to heat up to 212°F and an additional 130 hours to boil off down to a level of 10 ft above the spent fuel racks. This results in a total of 156 hours, or 6.5 days, from the start of the event when SFP cooling is lost before the pools reach a level 10 ft above the spent fuel racks.

RAI-2:

In its LAR, Duke Energy indicates that emergency auxiliary feedwater (AFW) water sources (e.g., the condensate storage tank) will be exhausted within the 24-hour period of analysis and that additional water sources, (e.g., lake water) will be provided for the remainder of the event. If crediting reliance on water sources that have a potential to include impurities that could impair heat transfer performance, demonstrate that decay heat can be removed via the steam generators and auxiliary feed water pumps until recovery of residual heat removal, including:

a. Describe the water sources for AFW after the condensate storage tank is depleted and how those sources will be provided to the AFW pumps.

b. Provide a summary of the results of any analyses performed on the impurities in those water sources and that the impacts of the impurities on the capability to effectively transfer heat from the primary loop, over the duration of the event, are minimal. (Will the impurities deposit on heat transfer sources reducing heat transfer coefficients sufficient to impair the ability to remove heat?)

c. Provide a summary of the results of any assessments performed that demonstrate that the impacts of the impurities in the water sources on the steam generator tube integrity, including an evaluation of the potential for erosion of the tubes from silica (and similar impurities) in the water are minimal.

HNP Response:

a. The RAI-1.a response shows that sufficient volume of demineralized water from the DWST and condensate from the hotwell is available to supply the CST for up to five days. Water from these sources meets water quality standards outlined in the most current revision of Electrical Power Research Institute Pressurized Water Reactor Secondary Water Chemistry Guidelines for recirculating steam generators and does not adversely affect steam generator heat transfer and the use of these sources does not have an associated time limit based on steam generator chemistry concerns. Though additional sources of water are available to remove decay heat from the steam generator (such as the pre-treated water storage tank and lake water through the ESW system), the reliance on these less pure sources have been determined to be unnecessary and is no longer assumed for the proposed LOOP scenario contingency plan for an extended loop and loss of the 'B' Train during the proposed AOT.

b. As noted in the RAI-1.a and RAI-2.a responses, there is sufficient volume from the DWST to supply the CST with water to support hot standby conditions for up to five days following a non-seismic extended LOOP event. The condenser hotwell can be used as an additional source. Water from these sources does not adversely affect steam generator heat transfer.

c. See response to RAI-2.b above.

RAI-3:

The NRC's guidance on risk-informed license amendment requests (Regulatory Guide (RG) 1.174, Rev. 2) states that when "risk increases are proposed, the benefits should be described and should be commensurate with the proposed risk increase." Examples of benefits appropriate for permanent or one-time changes to technical specifications (e.g., reduction in personnel exposure, avoidance of plant transient) are described in RG 1.177. The original request dated October 29, 2016 [sic], cited increased pump design margin for reliability as a benefit. Duke Energy no longer plans to perform this maintenance during the current cycle. Given this change, please explain whether the benefits associated with the LAR have changed and justify that they are commensurate with the proposed risk increase.

HNP Response:

The question indicates Duke Energy no longer plans to perform this maintenance during the current cycle. It is possible that the maintenance will be performed in the current cycle if the NRC approval supports that schedule. In any event, the increased pump design margin to improve reliability is commensurate with the risk increase during the maintenance period.

The risk increase associated with performing the maintenance activity during the requested 14-day allowed outage time is consistent with the guidance of RG 1.177. The increase is typical of the risk associated with performing routine online maintenance across the industry as managed

within the 10 CFR 50.65(a)(4) maintenance rule program. Performing the maintenance during a refueling outage would also have a risk impact, as a hypothetical loss of offsite power and failure of the redundant train components would then result in a loss of shutdown cooling. The defense-in-depth associated with the 'A' ESW pump replacement is greater by performing the work on-line, since AFW is available to support core cooling in Mode 3, in addition to the FLEX equipment. AFW would not be available if the work was performed during a refueling outage.

The risk associated with the maintenance, whether online or during a shutdown, is low and adequately managed with the proposed risk management actions. Therefore, with no major difference in risk between performing the maintenance online or shutdown, the benefit to the public health and safety associated with the maintenance is most significant when performed sooner rather than later.

RAI-4:

In its LAR, Duke Energy's justification for removing a train of ESW from service for maintenance relies, in part, on the availability and capability of the other train to perform its safety function. As such, please describe whether any special actions, beyond confirmation that routine surveillances, testing, and maintenance have been satisfactorily performed on the 'B' ESW pump and EDG, will be taken prior to starting maintenance on the 'A' ESW pump to ensure that the 'B' ESW pump and the 'B' EDG would start and run if necessary.

HNP Response:

There is an increased frequency of monitoring the 'B' ESW pump vibrations, similar to the 'A' ESW pump. The vibration monitoring and motor current signature analysis are being conducted on both the 'A' and 'B' ESW pumps. This monitoring is intended to provide an early indication of pump degradation. As described in HNP's previous RAI response to RAI-APLA-2: "The existing 'B' ESW pump vibration levels for this motor-pump have lower amplitudes and are more stable than what was observed on 'A' ESW pump prior to failure, especially on the 2X range which is most indicative of a misalignment issue. Also, this pump does not have the Green Tweed bearings, which are a possible causal factor for the 'A' ESW shaft coupling failure. These differences from the 'A' ESW pump give reasonable assurance that the 'B' ESW pump can be considered reliable." Currently, there are no adverse trends on the 'B' ESW pump. The trending of surveillances show no adverse indications.

Numerous SW system valves have been recently replaced, which provide additional confidence that the 'B' ESW system will start and run if necessary. The NSW supply valves to the 'A' and 'B' ESW headers, 1SW-39 was replaced in RFO-19 and 1SW-40 was replaced in RFO-16 and both valves have shown good performance (shown on the SW diagram included in Attachment 5). NSW flow discharge valves 1SW-274, replaced in RFO-18, and 1SW-276, replaced in RFO-19, have shown good performance (shown on the SW diagram included in Attachment 5).

There are currently no adverse trends identified on the 'B' EDG system. The trending of surveillances show no adverse indications.

The following new condition has been incorporated into the TS Bases markup provided in Attachment 4 of this submittal to improve confidence that the 'B' ESW pump and the 'B' EDG will run if necessary during the 'A' ESW pump replacement:

- EDG cooling flow will be verified prior to the AOT entry.
- 'B' EDG loading and operational check will be completed prior to the AOT entry.
- 'B' ESW pump operational check will be completed prior to the AOT entry.
- Proceduralized EDG inspections and checks will be performed daily for reliability during the AOT, which are normally completed weekly.
- Freeze protection equipment as required and ventilation in the intake buildings will be verified as functional prior to the AOT.
- Position of low head safety injection recirculation to RWST isolation valves, 1SI-448 and 1SI-331, will be verified prior to the AOT, in addition to other SW valves that will support the clearance for the pump replacement.

RAI-5:

In its LAR, Duke Energy stated the Work Control Program and associated procedures and programs that implement the Maintenance Rule Program under 50.65(a)(4) will provide for controls and assessments to preclude the possibility of simultaneous planned outages of redundant trains and ensure system reliability. Further, Section 3.7 Configuration Risk Management cites plant procedures that the licensee would use to ensure compliance with 50.65(a)(4). During the maintenance of 'A' ESW pump, the licensee is relying on the functionality of the INOPERABLE 'A' EDG and the OPERABILITY of the turbine-driven AFW pump, as well as the other components/systems listed in Section 7.0 of Attachment 6 of the LAR, for defense-in-depth in a LOOP and single failure of the 'B' ESW train.

If any of these protected systems/components listed in Section 7.0 become INOPERABLE or nonfunctional (as in the case of the 'A' EDG, which is already INOPERABLE but functional) either before maintenance or during maintenance of the 'A' ESW pump, the defense-in-depth available to remove decay heat would be significantly different. Therefore,

a. Describe what action you would take to ensure sufficient defense-in-depth if any of the systems/components described in Section 7.0 became INOPERABLE or nonfunctional, respectively, either before or during maintenance on the 'A' ESW pump.

b. How would the Work Control Program described in Section 3.3 and Configuration Risk Management described in Section 3.7 of the LAR manage defense-in-depth to ensure plant safety in the above described scenarios?

HNP Response:

a. The AOT will not be entered if any of the protected systems/components listed in Section 7.0 become INOPERABLE or non-functional. The pump replacement would not proceed until reliability concerns are addressed. If any of the protected systems/components listed in Section 7.0 become INOPERABLE or non-functional during the AOT, HNP will take action in accordance with TS 3.0.3, which states that when a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within one hour action shall be initiated to place the unit in a MODE in which the specification does not apply by placing it, as applicable, in: a. At least HOT STANDBY within the next six hours, b. At least HOT SHUTDOWN within the following six hours, and c. At least COLD SHUTDOWN within the subsequent 24 hours. Where corrective measures are completed that permit operation under the ACTION requirements, the action may be taken in accordance with the specified

time limits as measured from the time of failure to meet the Limiting Condition for Operation. There is backup FLEX equipment onsite and alternative means for decay heat removal via the motor-driven AFW pumps and the turbine-driven AFW pump, which provide defense-in-depth.

b. HNP will staff the Outage Command Center for the duration of the AOT to provide oversight and support for emergent issues. HNP will be ready to implement a contingency plan for connecting the FLEX ESW pump to the 'A' Train ESW header, to provide alternate cooling to the 'A' EDG in the event of a loss of offsite power (LOOP). Personnel will be trained to support necessary actions for this contingency plan. Additionally, operators will be briefed on procedures and guidance for equipment lineups and ASI system actions to improve response, as identified in Attachment 4. Numerous equipment will be protected during the AOT as identified in Attachment 4, fire watches will be implemented and restrictions on hot work and transient combustibles will be in place in risk critical areas, as identified in Attachment 4. Duke Energy fleet staff will be available to support plant staff with resolution of issues during the proposed AOT. Spare parts will be onsite to support emergent repairs, which include spare ESW pump parts as described in RAI-6 response, a spare FLEX ESW pump, and diesel generator parts. In the event that a LOOP or other condition were to occur during the AOT, HNP will be prepared to complete maintenance on the 'A' ESW pump within four days and sixteen hours. Within four hours from the time maintenance is completed on the 'A' ESW pump and it is turned over to Operations, the pump will be ready to begin cooling the 'A' ESW Train.

RAI-6:

In its LAR, Duke Energy stated that the ESW maintenance was anticipated to take approximately 10 days, which is within the 14-day AOT requested. Additional details are requested to enhance the staff's understanding of the planned risk management activities associated with the 'A' ESW pump replacement.

a. Will all parts needed for the replacement be verified to be on site prior to commencing the maintenance?

b. Are there any replacement parts that have a long lead time such that if the part is damaged during installation, completing the 'A' ESW pump maintenance during the 14-day AOT would be challenged? If so, describe the specific risk management activity associated with the activity.

c. What are the critical verification points during the 'A' ESW pump maintenance? Describe the specific risk management activity associated with each activity.

HNP Response:

a. ESW pump parts will be assembled and ready for installation prior to the AOT. There is a spare pump bay where the assembled ESW pump will be awaiting installation into the 'A' ESW pump structure. Other parts will be confirmed to be on-site prior to commencing maintenance.

b. The lead-time of obtaining parts will not be a challenge to completing this maintenance activity. The removed pump parts will remain intact as a contingency for replacement of any ‘A’ ESW pump parts, should there be an issue with the installation of the pump being put in in the ‘A’ ESW pump bay.

c. Corrective maintenance procedure CM-M0223, “(ESW) Ingersoll - Dresser Pump (Model 35LKX2) Disassembly and Maintenance,” available for audit, outlines the critical verification points during the ‘A’ ESW pump maintenance. Risks will be mitigated by utilizing quality control (QC) hold points, mechanic hold points, engineering hold points, datasheet entries, peer checks, concurrent verification, and critical step identification. The new pump will be fully assembled and the pump will be flow tested prior to starting the AOT. This pre-assembly will allow sufficient time for rigorous validation of the critical verification points. During the AOT, critical verification points include levelness measurements, torque checks on fasteners, plumbness checks, and motor to pump alignment. The specific risk management activities for each step are outlined in CM-M0223.

SERIAL HNP-16-056

ATTACHMENT 2

PROPOSED TECHNICAL SPECIFICATION CHANGES

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

DOCKET NO. 50-400

RENEWED LICENSE NUMBER NPF-63

LIMITING CONDITION FOR OPERATION

3.1.2.4 At least two charging/safety injection pumps shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

With only one charging/safety injection pump OPERABLE, restore at least two charging/safety injection pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to a SHUTDOWN MARGIN as specified in the CORE OPERATING LIMITS REPORT (COLR), plant procedure PLP-106 at 200°F within the next 6 hours; restore at least two charging/safety injection pumps to OPERABLE status within the next 7 days or be in HOT SHUTDOWN within the next 6 hours.

*

SURVEILLANCE REQUIREMENTS

4.1.2.4 At least two charging/safety injection pumps shall be demonstrated OPERABLE by verifying, on recirculation flow or in service supplying flow to the Reactor Coolant System and reactor coolant pump seals, that a differential pressure across each pump of greater than or equal to 2446 psid is developed when tested pursuant to the Inservice Testing Program.

ADD:

----------NOTE----------

*The 'A' Train charging/safety pump is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the 'A' Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the 'A' Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the 'A' Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in the HNP LAR submittal correspondence letter HNP-16-056.

3/4.5.2 ECCS SUBSYSTEMS - T_{avg} GREATER THAN OR EQUAL TO 350°F

LIMITING CONDITION FOR OPERATION

3.5.2 Two independent Emergency Core Cooling System (ECCS) subsystems shall be OPERABLE with each subsystem comprised of:

a. One OPERABLE Charging/safety injection pump,

b. One OPERABLE RHR heat exchanger,

c. One OPERABLE RHR pump, and

d. An OPERABLE flow path capable of taking suction from the refueling water storage tank on a Safety Injection signal and, upon being manually aligned, transferring suction to the containment sump during the recirculation phase of operation.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

a. With one ECCS subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. *

b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date. The current value of the usage factor for each affected Safety Injection nozzle shall be provided in this Special Report whenever its value exceeds 0.70.

INSERT A

SURVEILLANCE REQUIREMENTS

4.5.2 Each ECCS subsystem shall be demonstrated OPERABLE:

a. At least once per 12 hours by:

1. Verifying that the following valves are in the indicated positions with the control power disconnect switch in the "OFF" position, and the valve control switch in the "PULL TO LOCK" position:

INSERT A

----------NOTE----------

*The ‘A’ Train ECCS subsystem is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the ‘A’ Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the ‘A’ Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the ‘A’ Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two independent Containment Spray Systems shall be OPERABLE with each Spray System capable of taking suction from the RWST and transferring suction to the containment sump.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With one Containment Spray System inoperable, restore the inoperable Spray System to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours; restore the inoperable Spray System to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours. Refer also to Specification 3.6.2.3 Action. *

INSERT B

SURVEILLANCE REQUIREMENTS

4.6.2.1 Each Containment Spray System shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position;

b. By verifying that, on an indicated recirculation flow of at least 1832 gpm, each pump develops a differential pressure of greater than or equal to 186 psi when tested pursuant to the Inservice Testing Program;

c. At least once per 18 months by:

1. Verifying that each automatic valve in the flow path actuates to its correct position on a containment spray actuation test signal and

2. Verifying that each spray pump starts automatically on a containment spray actuation test signal.

3. Verifying that, coincident with an indication of containment spray pump running, each automatic valve from the sump and RWST actuates to its appropriate position following an RWST Lo-Lo test signal.

d. At least once per 10 years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed.

INSERT B

----------NOTE----------

*The ‘A’ Train Containment Spray System is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the ‘A’ Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the ‘A’ Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the ‘A’ Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

SPRAY ADDITIVE SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2.2 The Spray Additive System shall be OPERABLE with:

a. A Spray Additive Tank containing a volume of between 3268 and 3768 gallons of between 27 and 29 weight % of NaOH solution, and

b. Two spray additive eductors each capable of adding NaOH solution from the chemical additive tank to a Containment Spray System pump flow.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With the Spray Additive System inoperable, restore the system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours; restore the Spray Additive System to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours. *

INSERT C

SURVEILLANCE REQUIREMENTS

4.6.2.2 The Spray Additive System shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position;

b. At least once per 6 months by:

1. Verifying the contained solution volume in the tank, and

2. Verifying the concentration of the NaOH solution by chemical analysis.

c. At least once per 18 months by verifying that each automatic valve in the flow path actuates to its correct position on a containment spray or containment isolation phase A test signal as applicable; and

d. At least once per 5 years by verifying each eductor flow rate is between 17.2 and 22.2 gpm, using the RWST as the test source containing at least 436,000 gallons of water.

INSERT C

----------NOTE----------

*The Spray Additive System is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the 'A' Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the 'A' Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the 'A' Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

LIMITING CONDITION FOR OPERATION

3.6.2.3 Four containment fan coolers (AH-1, AH-2, AH-3, and AH-4) shall be OPERABLE with one of two fans in each cooler capable of operation at low speed. Train SA consists of AH-2 and AH-3. Train SB consists of AH-1 and AH-4.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With one train of the above required containment fan coolers inoperable and both Containment Spray Systems OPERABLE, restore the inoperable train of fan coolers to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With both trains of the above required containment fan coolers inoperable and both Containment Spray Systems OPERABLE, restore at least one train of fan coolers to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore both above required trains of fan coolers to OPERABLE status within 7 days of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With one train of the above required containment fan coolers inoperable and one Containment Spray System inoperable, restore the inoperable Spray System to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore the inoperable train of containment fan coolers to OPERABLE status within 7 days of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. *

INSERT D

SURVEILLANCE REQUIREMENTS

4.6.2.3 Each train of containment fan coolers shall be demonstrated OPERABLE:

a. At least once per 31 days by:

1. Starting each fan train from the control room, and verifying that each fan train operates for at least 15 minutes, and

2. Verifying a cooling water flow rate, after correction to design basis service water conditions, of greater than or equal to 1300 gpm to each cooler.

b. At least once per 18 months by verifying that each fan train starts automatically on a safety injection test signal.

INSERT D

----------NOTE----------

*The ‘A’ Train containment fan coolers and the ‘A’ Train Containment Spray System are allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the ‘A’ Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the ‘A’ Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the ‘A’ Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

LIMITING CONDITION FOR OPERATION

3.7.1.2 At least three independent steam generator auxiliary feedwater pumps and associated flow paths shall be OPERABLE with:

a. Two motor-driven auxiliary feedwater pumps, each capable of being powered from separate emergency buses, and

b. One steam turbine-driven auxiliary feedwater pump capable of being powered from an OPERABLE steam supply system.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

a. With one auxiliary feedwater pump inoperable, restore the required auxiliary feedwater pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. *

b. With two auxiliary feedwater pumps inoperable, be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

c. With three auxiliary feedwater pumps inoperable, immediately initiate corrective action to restore at least one auxiliary feedwater pump to OPERABLE status as soon as possible. (NOTE: LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. Following restoration of one AFW train, all applicable LCOs apply based on the time the LCOs initially occurred.)

INSERT E

SURVEILLANCE REQUIREMENTS

4.7.1.2.1 Each auxiliary feedwater pump shall be demonstrated OPERABLE:

a. At least once per 92 days on a STAGGERED TEST BASIS by:

1. Demonstrating that each motor-driven pump satisfies performance requirements by either:

a) Verifying each pump develops a differential pressure that (when temperature - compensated to 70°F) is greater than or equal to 1514 psid at a recirculation flow of greater than or equal to 50 gpm (25 KPPH), or

b) Verifying each pump develops a differential pressure that (when temperature - compensated to 70°F) is greater than or equal to 1259 psid at a flow rate of greater than or equal to 430 gpm (215 KPPH).

INSERT E

----------NOTE----------

*The ‘A’ Train auxiliary feedwater pump is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the ‘A’ Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the ‘A’ Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the ‘A’ Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

3/4.7.3 COMPONENT COOLING WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.3 At least two component cooling water (CCW) pumps*, heat exchangers and essential flow paths shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With only one component cooling water flow path OPERABLE, restore at least two flow paths to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. **

SURVEILLANCE REQUIREMENTS

4.7.3 At least two component cooling water flow paths shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) servicing safety-related equipment that is not locked, sealed, or otherwise secured in position is in its correct position; and

b. At least once per 18 months by verifying that:

1. Each automatic valve servicing safety-related equipment or isolating non-safety-related components actuates to its correct position on a Safety Injection test signal, and

2. Each Component Cooling Water System pump required to be OPERABLE starts automatically on a Safety Injection test signal.

3. Each automatic valve serving the gross failed fuel detector and sample system heat exchangers actuates to its correct position on a Low Surge Tank Level test signal.

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* The breaker for CCW pump IC-SAB shall not be racked into either power source (SA or SB) unless the breaker from the applicable CCW pump (IA-SA or IB-SB) is racked out.

INSERT F →

INSERT F

----------NOTE----------

**The ‘A’ Train component cooling water flow path is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the ‘A’ Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the ‘A’ Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the ‘A’ Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

3/4.7.4 EMERGENCY SERVICE WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.4 At least two independent emergency service water loops shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With only one emergency service water loop OPERABLE, restore at least two loops-to-OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. *

INSERT G

SURVEILLANCE REQUIREMENTS

4.7.4 At least two emergency service water loops shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) servicing safety-related equipment that is not locked, sealed, or otherwise secured in position is in its correct position; and

b. At least once per 18 months by verifying that:

1. Each automatic valve servicing safety-related equipment or isolating non-safety portions of the system actuates to its correct position on a Safety Injection test signal, and

2. Each emergency service water pump and each emergency service water booster pump starts automatically on a Safety Injection test signal.

INSERT G

----------NOTE----------

*The ‘A’ Train emergency service water loop is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the ‘A’ Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the ‘A’ Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the ‘A’ Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

3/4.7.6 CONTROL ROOM EMERGENCY FILTRATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.6 Two independent Control Room Emergency Filtration Systems (CREFS) shall be OPERABLE.*

APPLICABILITY: a. MODES 1, 2, 3, and 4

b. MODES 5 and 6

c. During movement of irradiated fuel assemblies and movement of loads over spent fuel pools

ACTION:

a. MODES 1, 2, 3 and 4:

----------NOTE----------
In addition to the Actions below, perform Action c. if applicable.
---

1. With one CREFS train inoperable for reasons other than an inoperable Control Room Envelope (CRE) boundary, restore the inoperable CREFS train to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. **
2. With one or more CREFS trains inoperable due to inoperable CRE boundary:
   a. Initiate action to implement mitigating actions immediately or be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours:
   b. Within 24 hours, verify mitigating actions ensure CRE occupant radiological exposures will not exceed limits and that CRE occupants are protected from hazardous chemicals and smoke or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours;
   c. Restore CRE boundary to OPERABLE within 90 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. MODES 5 and 6

----------NOTE----------
In addition to the Actions below, perform Action c. if applicable.
---

1. With one CREFS train inoperable for reasons other than an inoperable CRE boundary, restore the inoperable CREFS train to OPERABLE status within 7 days or immediately initiate and maintain operation of the remaining OPERABLE CREFS train in the recirculation mode.

INSERT H

* The control room envelope (CRE) boundary may be opened intermittently under administrative controls.

INSERT H

----------NOTE----------

**The ‘A’ CREFS Train is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the ‘A’ Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the ‘A’ Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the ‘A’ Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

3/4.7.7 REACTOR AUXILIARY BUILDING (RAB) EMERGENCY EXHAUST SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.7 Two independent RAB Emergency Exhaust Systems shall be OPERABLE.*

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With one RAB Emergency Exhaust System inoperable, restore the inoperable system to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. **

b. With two RAB Emergency Exhaust Systems inoperable due to an inoperable RAB Emergency Exhaust System boundary, restore the RAB Emergency Exhaust System boundary to OPERABLE status within 24 hours. Otherwise, be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.7 Each RAB Emergency Exhaust System shall be demonstrated OPERABLE:

a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 continuous hours with the heaters operating:

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following significant painting, fire, or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% and uses the test procedure guidance in Regulatory Positions C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the unit flow rate is 6800 cfm ± 10% during system operation when tested in accordance with ANSI N510-1980;

2. Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, has a methyl iodine penetration of ≤ 2.5% when tested at a temperature of 30°C and at a relative humidity of 70% in accordance with ASTM D3803-1989.

* The RAB Emergency Exhaust Systems boundary may be opened intermittently under administrative controls.

INSERT I

INSERT I

----------NOTE----------

** The ‘A’ Train RAB Emergency Exhaust System is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the ‘A’ Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the ‘A’ Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the ‘A’ Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

3/4.7.13 ESSENTIAL SERVICES CHILLED WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.13 At least two independent Essential Services Chilled Water System loops shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With only one Essential Services Chilled Water System loop OPERABLE, restore at least two loops to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. *

INSERT J

SURVEILLANCE REQUIREMENTS

4.7.13 The Essential Services Chilled Water System shall be demonstrated OPERABLE by:

a. Performance of surveillances as required by the Inservice Testing Program, and

b. At least once per 18 months by demonstrating that:

1. Non-essential portions of the system are automatically isolated upon receipt of a Safety Injection actuation signal, and

2. The system starts automatically on a Safety Injection actuation signal.

INSERT J

----------NOTE----------

*The ‘A’ Train Essential Services Chilled Water System loop is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the ‘A’ Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the ‘A’ Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available Normal Service Water will remain available and in service to supply the ‘A’ Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generators, each with:

1. A separate day tank containing a minimum of 1457 gallons of fuel,

2. A separate main fuel oil storage tank containing a minimum of 100,000 gallons of fuel, and

3. A separate fuel oil transfer pump.

c. Automatic Load Sequencers for Train A and Train B.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With one offsite circuit of 3.8.1.1.a inoperable:

1. Perform Surveillance Requirement 4.8.1.1.1.a within 1 hour and once per 8 hours thereafter; and

2. Restore the offsite circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours; and

3. Verify required feature(s) powered from the OPERABLE offsite A.C. source are OPERABLE. If required feature(s) powered from the OPERABLE offsite circuit are discovered to be inoperable at any time while in this condition, restore the required feature(s) to OPERABLE status within 24 hours from discovery of inoperable required feature(s) or declare the redundant required feature(s) powered from the inoperable A.C. source as inoperable.

LIMITING CONDITION FOR OPERATION

ACTION (Continued):

b. With one diesel generator of 3.8.1.1.b inoperable:

1. Perform Surveillance Requirement 4.8.1.1.1.a within 1 hour and once per 8 hours thereafter; and

*2. Within 24 hours, determine the OPERABLE diesel generator is not inoperable due to a common cause failure or perform Surveillance Requirement 4.8.1.1.2.a.4#; and

3. Restore the diesel generator to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours; and

**

4. Verify required feature(s) powered from the OPERABLE diesel generator are OPERABLE. If required feature(s) powered from the OPERABLE diesel generator are discovered to be inoperable at any time while in this condition, restore the required feature(s) to OPERABLE status within 4 hours from discovery of inoperable required feature(s) or declare the redundant required feature(s) powered from the inoperable A.C. source as inoperable.

c. With one offsite circuit and one diesel generator of 3.8.1.1 inoperable:

NOTE: Enter applicable Condition(s) and Required Action(s) of LCO 3/4.8.3, ONSITE POWER DISTRIBUTION - OPERATING, when this condition is entered with no A.C. power to one train.

1. Restore one of the inoperable A.C. sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

2. Following restoration of one A.C. source (offsite circuit or diesel generator), restore the remaining inoperable A.C. source to OPERABLE status pursuant to requirements of either ACTION a or b, based on the time of initial loss of the remaining A.C. source.

---

* This ACTION is required to be completed regardless of when the inoperable EDG is restored to OPERABILITY.

Activities that normally support testing pursuant to 4.8.1.1.2.a.4, which would render the diesel inoperable (e.g., air roll), shall not be performed for testing required by this ACTION statement.

INSERT K

INSERT K

----------NOTE----------

** ‘The ‘A’ diesel generator is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the ‘A’ Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the ‘A’ Train ESW pump from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the ‘A’ Train ESW equipment until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence HNP-16-056.

SERIAL HNP-16-056

ATTACHMENT 3

REVISED TECHNICAL SPECIFICATION PAGES

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

DOCKET NO. 50-400

RENEWED LICENSE NUMBER NPF-63

LIMITING CONDITION FOR OPERATION

3.1.2.4 At least two charging/safety injection pumps shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

With only one charging/safety injection pump OPERABLE, restore at least two charging/safety injection pumps to OPERABLE status within 72 hours* or be in at least HOT STANDBY and borated to a SHUTDOWN MARGIN as specified in the CORE OPERATING LIMITS REPORT (COLR), plant procedure PLP-106 at 200°F within the next 6 hours; restore at least two charging/safety injection pumps to OPERABLE status within the next 7 days or be in HOT SHUTDOWN within the next 6 hours.

---NOTE---

*The 'A' Train charging/safety pump is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the 'A' Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the 'A' Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the 'A' Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in the HNP LAR submittal correspondence letter HNP-16-056.

SURVEILLANCE REQUIREMENTS

4.1.2.4 At least two charging/safety injection pumps shall be demonstrated OPERABLE by verifying, on recirculation flow or in service supplying flow to the Reactor Coolant System and reactor coolant pump seals, that a differential pressure across each pump of greater than or equal to 2446 psid is developed when tested pursuant to the Inservice Testing Program.

3/4.5.2 ECCS SUBSYSTEMS - T_{avg} GREATER THAN OR EQUAL TO 350°F

LIMITING CONDITION FOR OPERATION

3.5.2 Two independent Emergency Core Cooling System (ECCS) subsystems shall be OPERABLE with each subsystem comprised of:

a. One OPERABLE Charging/safety injection pump,

b. One OPERABLE RHR heat exchanger,

c. One OPERABLE RHR pump, and

d. An OPERABLE flow path capable of taking suction from the refueling water storage tank on a Safety Injection signal and, upon being manually aligned, transferring suction to the containment sump during the recirculation phase of operation.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

a. With one ECCS subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours* or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date. The current value of the usage factor for each affected Safety Injection nozzle shall be provided in this Special Report whenever its value exceeds 0.70.

---------- NOTE ----------

*The 'A' Train ECCS subsystem is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the 'A' Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the 'A' Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the 'A' Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

SURVEILLANCE REQUIREMENTS

4.5.2 Each ECCS subsystem shall be demonstrated OPERABLE:

a. At least once per 12 hours by:

1. Verifying that the following valves are in the indicated positions with the control power disconnect switch in the "OFF" position, and the valve control switch in the "PULL TO LOCK" position:

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two independent Containment Spray Systems shall be OPERABLE with each Spray System capable of taking suction from the RWST and transferring suction to the containment sump.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With one Containment Spray System inoperable, restore the inoperable Spray System to OPERABLE status within 72 hours* or be in at least HOT STANDBY within the next 6 hours; restore the inoperable Spray System to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours. Refer also to Specification 3.6.2.3 Action.

---------- NOTE ----------

*The 'A' Train Containment Spray System is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the 'A' Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the 'A' Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the 'A' Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

SURVEILLANCE REQUIREMENTS

4.6.2.1 Each Containment Spray System shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position;

b. By verifying that, on an indicated recirculation flow of at least 1832 gpm, each pump develops a differential pressure of greater than or equal to 186 psi when tested pursuant to the Inservice Testing Program;

c. At least once per 18 months by:

1. Verifying that each automatic valve in the flow path actuates to its correct position on a containment spray actuation test signal and

2. Verifying that each spray pump starts automatically on a containment spray actuation test signal.

3. Verifying that, coincident with an indication of containment spray pump running, each automatic valve from the sump and RWST actuates to its appropriate position following an RWST Lo-Lo test signal.

d. At least once per 10 years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed.

LIMITING CONDITION FOR OPERATION

3.6.2.2 The Spray Additive System shall be OPERABLE with:

a. A Spray Additive Tank containing a volume of between 3268 and 3768 gallons of between 27 and 29 weight % of NaOH solution, and

b. Two spray additive eductors each capable of adding NaOH solution from the chemical additive tank to a Containment Spray System pump flow.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With the Spray Additive System inoperable, restore the system to OPERABLE status within 72 hours* or be in at least HOT STANDBY within the next 6 hours; restore the Spray Additive System to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours.

---NOTE---

*The Spray Additive System is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the 'A' Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the 'A' Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the 'A' Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

SURVEILLANCE REQUIREMENTS

4.6.2.2 The Spray Additive System shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position;

b. At least once per 6 months by:

1. Verifying the contained solution volume in the tank, and

2. Verifying the concentration of the NaOH solution by chemical analysis.

c. At least once per 18 months by verifying that each automatic valve in the flow path actuates to its correct position on a containment spray or containment isolation phase A test signal as applicable; and

d. At least once per 5 years by verifying each eductor flow rate is between 17.2 and 22.2 gpm, using the RWST as the test source containing at least 436,000 gallons of water.

LIMITING CONDITION FOR OPERATION

3.6.2.3 Four containment fan coolers (AH-1, AH-2, AH-3, and AH-4) shall be OPERABLE with one of two fans in each cooler capable of operation at low speed. Train SA consists of AH-2 and AH-3. Train SB consists of AH-1 and AH-4.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With one train of the above required containment fan coolers inoperable and both Containment Spray Systems OPERABLE, restore the inoperable train of fan coolers to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With both trains of the above required containment fan coolers inoperable and both Containment Spray Systems OPERABLE, restore at least one train of fan coolers to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore both above required trains of fan coolers to OPERABLE status within 7 days of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With one train of the above required containment fan coolers inoperable and one Containment Spray System inoperable, restore the inoperable Spray System to OPERABLE status within 72 hours* or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore the inoperable train of containment fan coolers to OPERABLE status within 7 days of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

---------- NOTE ----------

*The ‘A’ Train containment fan coolers and the ‘A’ Train Containment Spray System are allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the ‘A’ Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the ‘A’ Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the ‘A’ Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

SURVEILLANCE REQUIREMENTS

4.6.2.3 Each train of containment fan coolers shall be demonstrated OPERABLE:

a. At least once per 31 days by:

1. Starting each fan train from the control room, and verifying that each fan train operates for at least 15 minutes, and

2. Verifying a cooling water flow rate, after correction to design basis service water conditions, of greater than or equal to 1300 gpm to each cooler.

b. At least once per 18 months by verifying that each fan train starts automatically on a safety injection test signal.

LIMITING CONDITION FOR OPERATION

3.7.1.2 At least three independent steam generator auxiliary feedwater pumps and associated flow paths shall be OPERABLE with:

a. Two motor-driven auxiliary feedwater pumps, each capable of being powered from separate emergency buses, and

b. One steam turbine-driven auxiliary feedwater pump capable of being powered from an OPERABLE steam supply system.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

a. With one auxiliary feedwater pump inoperable, restore the required auxiliary feedwater pumps to OPERABLE status within 72 hours* or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. With two auxiliary feedwater pumps inoperable, be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

c. With three auxiliary feedwater pumps inoperable, immediately initiate corrective action to restore at least one auxiliary feedwater pump to OPERABLE status as soon as possible. (NOTE: LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. Following restoration of one AFW train, all applicable LCOs apply based on the time the LCOs initially occurred.)

---------- NOTE ----------

*The 'A' Train auxiliary feedwater pump is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the 'A' Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the 'A' Train ESW pump supply from the Auxiliary Reservoir or the Main Reservoir is not available, Normal Service Water will remain available and in service to supply the 'A' Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

SURVEILLANCE REQUIREMENTS

4.7.1.2.1 Each auxiliary feedwater pump shall be demonstrated OPERABLE:

a. At least once per 92 days on a STAGGERED TEST BASIS by:

1. Demonstrating that each motor-driven pump satisfies performance requirements by either:

a) Verifying each pump develops a differential pressure that (when temperature - compensated to 70°F) is greater than or equal to 1514 psid at a recirculation flow of greater than or equal to 50 gpm (25 KPPH), or

b) Verifying each pump develops a differential pressure that (when temperature - compensated to 70°F) is greater than or equal to 1259 psid at a flow rate of greater than or equal to 430 gpm (215 KPPH).

3/4.7.3 COMPONENT COOLING WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.3 At least two component cooling water (CCW) pumps*, heat exchangers and essential flow paths shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With only one component cooling water flow path OPERABLE, restore at least two flow paths to OPERABLE status within 72 hours** or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.3 At least two component cooling water flow paths shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) servicing safety-related equipment that is not locked, sealed, or otherwise secured in position is in its correct position; and

b. At least once per 18 months by verifying that:

1. Each automatic valve servicing safety-related equipment or isolating non-safety-related components actuates to its correct position on a Safety Injection test signal, and

2. Each Component Cooling Water System pump required to be OPERABLE starts automatically on a Safety Injection test signal.

3. Each automatic valve serving the gross failed fuel detector and sample system heat exchangers actuates to its correct position on a Low Surge Tank Level test signal.

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* The breaker for CCW pump lC-SAB shall not be racked into either power source (SA or SB) unless the breaker from the applicable CCW pump (lA-SA or lB-SB) is racked out.

**The ‘A’ Train component cooling water flow path is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the ‘A’ Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the ‘A’ Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the ‘A’ Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

3/4.7.4 EMERGENCY SERVICE WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.4 At least two independent emergency service water loops shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With only one emergency service water loop OPERABLE, restore at least two loops-to-OPERABLE status within 72 hours* or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

---------- NOTE ----------

*The 'A' Train emergency service water loop is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the 'A' Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the 'A' Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the 'A' Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

SURVEILLANCE REQUIREMENTS

4.7.4 At least two emergency service water loops shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) servicing safety-related equipment that is not locked, sealed, or otherwise secured in position is in its correct position; and

b. At least once per 18 months by verifying that:

   1. Each automatic valve servicing safety-related equipment or isolating non-safety portions of the system actuates to its correct position on a Safety Injection test signal, and

   2. Each emergency service water pump and each emergency service water booster pump starts automatically on a Safety Injection test signal.

3/4.7.6 CONTROL ROOM EMERGENCY FILTRATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.6 Two independent Control Room Emergency Filtration Systems (CREFS) shall be OPERABLE.*

APPLICABILITY: a. MODES 1, 2, 3, and 4

b. MODES 5 and 6

c. During movement of irradiated fuel assemblies and movement of loads over spent fuel pools

ACTION:

a. MODES 1, 2, 3 and 4:

----------NOTE----------
In addition to the Actions below, perform Action c. if applicable.
---

1. With one CREFS train inoperable for reasons other than an inoperable Control Room Envelope (CRE) boundary, restore the inoperable CREFS train to OPERABLE status within 7 days** or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
2. With one or more CREFS trains inoperable due to inoperable CRE boundary:
   a. Initiate action to implement mitigating actions immediately or be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours:
   b. Within 24 hours, verify mitigating actions ensure CRE occupant radiological exposures will not exceed limits and that CRE occupants are protected from hazardous chemicals and smoke or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours;
   c. Restore CRE boundary to OPERABLE within 90 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

* The control room envelope (CRE) boundary may be opened intermittently under administrative controls.

**The 'A' CREFS Train is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the 'A' Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the 'A' Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the 'A' Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

LIMITING CONDITION FOR OPERATION (Continued)

b. MODES 5 and 6

----------NOTE----------
In addition to the Actions below, perform Action c. if applicable.
---

1. With one CREFS train inoperable for reasons other than an inoperable CRE boundary, restore the inoperable CREFS train to OPERABLE status within 7 days or immediately initiate and maintain operation of the remaining OPERABLE CREFS train in the recirculation mode.
2. With both CREFS trains inoperable for reasons other than an inoperable CRE boundary or with the OPERABLE CREFS train required to be in the recirculation mode by ACTION b.1., not capable of being powered by an OPERABLE emergency power source, immediately suspend all operations involving CORE ALTERATIONS or movement of irradiated fuel.
3. With one or more CREFS trains inoperable due to inoperable CRE boundary, immediately suspend all operations involving CORE ALTERATIONS or movement of irradiated fuel assemblies.

3/4.7.7 REACTOR AUXILIARY BUILDING (RAB) EMERGENCY EXHAUST SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.7 Two independent RAB Emergency Exhaust Systems shall be OPERABLE.*

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With one RAB Emergency Exhaust System inoperable, restore the inoperable system to OPERABLE status within 7 days** or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With two RAB Emergency Exhaust Systems inoperable due to an inoperable RAB Emergency Exhaust System boundary, restore the RAB Emergency Exhaust System boundary to OPERABLE status within 24 hours. Otherwise, be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.7 Each RAB Emergency Exhaust System shall be demonstrated OPERABLE:

a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 continuous hours with the heaters operating:

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following significant painting, fire, or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% and uses the test procedure guidance in Regulatory Positions C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the unit flow rate is 6800 cfm ± 10% during system operation when tested in accordance with ANSI N510-1980;

2. Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, has a methyl iodine penetration of ≤ 2.5% when tested at a temperature of 30°C and at a relative humidity of 70% in accordance with ASTM D3803-1989.

* The RAB Emergency Exhaust Systems boundary may be opened intermittently under administrative controls.

** The ‘A’ Train RAB Emergency Exhaust System is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the ‘A’ Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the ‘A’ Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the ‘A’ Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

3/4.7.13 ESSENTIAL SERVICES CHILLED WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.13 At least two independent Essential Services Chilled Water System loops shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With only one Essential Services Chilled Water System loop OPERABLE, restore at least two loops to OPERABLE status within 72 hours* or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

---------- NOTE ----------

*The 'A' Train Essential Services Chilled Water System loop is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the 'A' Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the 'A' Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the 'A' Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

SURVEILLANCE REQUIREMENTS

4.7.13 The Essential Services Chilled Water System shall be demonstrated OPERABLE by:

a. Performance of surveillances as required by the Inservice Testing Program, and

b. At least once per 18 months by demonstrating that:

1. Non-essential portions of the system are automatically isolated upon receipt of a Safety Injection actuation signal, and

2. The system starts automatically on a Safety Injection actuation signal.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generators, each with:

1. A separate day tank containing a minimum of 1457 gallons of fuel,

2. A separate main fuel oil storage tank containing a minimum of 100,000 gallons of fuel, and

3. A separate fuel oil transfer pump.

c. Automatic Load Sequencers for Train A and Train B.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With one offsite circuit of 3.8.1.1.a inoperable:

1. Perform Surveillance Requirement 4.8.1.1.1.a within 1 hour and once per 8 hours thereafter; and

2. Restore the offsite circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours; and

3. Verify required feature(s) powered from the OPERABLE offsite A.C. source are OPERABLE. If required feature(s) powered from the OPERABLE offsite circuit are discovered to be inoperable at any time while in this condition, restore the required feature(s) to OPERABLE status within 24 hours from discovery of inoperable required feature(s) or declare the redundant required feature(s) powered from the inoperable A.C. source as inoperable.

b. With one diesel generator of 3.8.1.1.b inoperable:

1. Perform Surveillance Requirement 4.8.1.1.1.a within 1 hour and once per 8 hours thereafter; and

*2. Within 24 hours, determine the OPERABLE diesel generator is not inoperable due to a common cause failure or perform Surveillance Requirement 4.8.1.1.2.a.4#; and

* This ACTION is required to be completed regardless of when the inoperable EDG is restored to OPERABILITY.

Activities that normally support testing pursuant to 4.8.1.1.2.a.4, which would render the diesel inoperable (e.g., air roll), shall not be performed for testing required by this ACTION statement.

LIMITING CONDITION FOR OPERATION

ACTION (Continued):

3. Restore the diesel generator to OPERABLE status within 72 hours** or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours; and
4. Verify required feature(s) powered from the OPERABLE diesel generator are OPERABLE. If required feature(s) powered from the OPERABLE diesel generator are discovered to be inoperable at any time while in this condition, restore the required feature(s) to OPERABLE status within 4 hours from discovery of inoperable required feature(s) or declare the redundant required feature(s) powered from the inoperable A.C. source as inoperable.

c. With one offsite circuit and one diesel generator of 3.8.1.1 inoperable:

NOTE: Enter applicable Condition(s) and Required Action(s) of LCO 3/4.8.3, ONSITE POWER DISTRIBUTION - OPERATING, when this condition is entered with no A.C. power to one train.

1. Restore one of the inoperable A.C. sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
2. Following restoration of one A.C. source (offsite circuit or diesel generator), restore the remaining inoperable A.C. source to OPERABLE status pursuant to requirements of either ACTION a or b, based on the time of initial loss of the remaining A.C. source.

**The ‘A’ diesel generator is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the ‘A’ Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the ‘A’ Train ESW pump from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the ‘A’ Train ESW equipment until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence HNP-16-056.

SERIAL HNP-16-056

ATTACHMENT 4

PROPOSED TECHNICAL SPECIFICATION BASES CHANGES

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

DOCKET NO. 50-400

RENEWED LICENSE NUMBER NPF-63

3/4.7.3 COMPONENT COOLING WATER SYSTEM

The OPERABILITY of the Component Cooling Water System ensures that sufficient cooling capacity is available for continued operation of safety-related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the safety analyses.

3/4.7.4 EMERGENCY SERVICE WATER SYSTEM

The OPERABILITY of the Emergency Service Water System ensures that sufficient cooling capacity is available for continued operation of safety-related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the safety analyses.

INSERT A

3/4.7.5 ULTIMATE HEAT SINK

The limitations on the ultimate heat sink level and temperature ensure that sufficient cooling capacity is available either: (1) provide normal cooldown of the facility or (2) mitigate the effects of accident conditions within acceptable limits.

The limitations on minimum water level and maximum temperature are based on providing a 30-day cooling water supply to safety-related equipment without exceeding its design basis temperature and is consistent with the recommendations of Regulatory Guide 1.27, "Ultimate Heat Sink for Nuclear Plants," Rev. 2, January 1976.

3/4.7.6 CONTROL ROOM EMERGENCY FILTRATION SYSTEM

BACKGROUND

The CREFS provides a protected environment from which occupants can control the unit following an uncontrolled release of radioactivity, hazardous chemicals, or smoke.

The CREFS consists of two independent, redundant trains that recirculate and filter the air in the control room envelope (CRE) and a CRE boundary that limits the inleakage of unfiltered air. Each CREFS train consists of a prefilter or demister, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of gaseous activity (principally iodines), and a fan. Ductwork, valves or dampers, doors, barriers, and instrumentation also form part of the system, as well as demisters to remove water droplets from the air stream. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provides backup in case of failure of the main HEPA filter bank.

The CRE is the area within the confines of the CRE boundary that contains the spaces that control room occupants inhabit to control the unit during normal and accident conditions. This area encompasses the control room, and may

INSERT A (4 pages total)

---------- NOTE ----------

A one-time change to TS 3.7.4 extends the action statement completion time from 72 hours to 14 days in order to replace the 'A' ESW pump. This change also affects TS 3.1.2.4, “Charging Pumps - Operating,” TS 3.5.2, “ECCS Subsystems - Tavg Greater Than or Equal To 350°F,” TS 3.6.2.1, “Containment Spray System,” TS 3.6.2.2, “Spray Additive System,” TS 3.6.2.3, “Containment Cooling System,” TS 3.7.1.2, “Auxiliary Feedwater System,” TS 3.7.3, “Component Cooling Water System,” TS 3.7.4, “Emergency Service Water System,” TS 3.7.6, “Control Room Emergency Filtration System,” TS 3.7.7, “Reactor Auxiliary Building (RAB) Emergency Exhaust System,” TS 3.7.13, “Essential Services Chilled Water System,” and TS 3.8.1.1, “AC Sources - Operating.”

A note similar to the following is placed in each of the above listed TS:

* The 'A' Train emergency service water loop is allowed to be inoperable for a total of 14 days only to allow for the implementation of design improvements on the 'A' Train ESW pump. The 14 days will be taken one time no later than March 31, 2018. During the period in which the 'A' Train ESW pump supply from the Auxiliary Reservoir or Main Reservoir is not available, Normal Service Water will remain available and in service to supply the ‘A' Train ESW equipment loads until the system is ready for post maintenance testing. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures and Conditions described in HNP LAR submittal correspondence letter HNP-16-056.

#	CONDITIONS ASSOCIATED WITH ONE TIME TS CHANGE
1	Normal Service Water (NSW) will remain available and in service for the duration of the allowed outage time (AOT) to support operation of the 'A' Emergency Diesel Generator (EDG) if required. OP-155, "Diesel Generator Emergency Power System," Section 5.1.2, "EDG Control Room Manual Start," step 2 says "VERIFY service water flow has been established to the EDG per OP-139." OP-139, Section 5.3, "Supplying Both ESW [Emergency Service Water] Headers with NSW/Securing ESW Pump," requires the NSW header in service and the ESW header filled and vented per Section 8.24, which would align Service Water to the EDG. This condition is an assumption in the risk metric calculations for the AOT.
2	The 'B' Train ESW will remain operable. OWP-SW, "Service Water," includes component lineups necessary when an ESW pump is inoperable that provides defense-in-depth for prevention of core damage and containment failure. The lineup steps for time periods when the 'A' ESW pump is inoperable include the lifting of leads to disable the Safety Injection (SI) close signal to service water valve 1SW-39 and service water valve 1SW-276. This allows the breakers to be maintained on and allows expeditious isolation capability in the event of a SW leak in the Reactor Auxiliary Building (RAB). This lineup also defeats the SI signal to service water valve 1SW-276 to maintain it open. As long as service water valves 1SW-274 and 1SW-40 are operable, the 'B' Train ESW header is isolable and operable.
3	In accordance with OMM-001, "Operations Administrative Requirements," the following equipment is posted protected by Operations when 'A' ESW pump is unavailable: Switchyard (Breakers 52-1, 52-2, 52-3 and Line Panels 5, 6, and 7), 'B' ESW pump and breaker, B-Train Process Instrumentation Control (PIC) cabinets (PIC 2, 4, 10, 14, and 18), and the 'A' Start-up Transformer. This condition is an assumption in the risk metric calculations for the AOT.
4	Prior to the AOT entry, the weather forecast will be reviewed for any forecasted weather that could affect the availability of offsite power. The outage will not commence if weather conditions are predicted that could adversely affect the availability of offsite power. WCM-001, "On-line Maintenance Risk Management," requires review of the weather forecast prior to the beginning of this maintenance outage. This condition is an assumption in the risk metric calculations for the AOT.

#	CONDITIONS ASSOCIATED WITH ONE TIME TS CHANGE
5	The opposite train or critical equipment listed below and supporting components will be posted protected: • EDGs (both 'A' and 'B' EDGs) • NSW Pumps and power supplies (both 'A' and 'B' NSW Pumps) • Dedicated Shutdown Diesel Generator • Alternate Seal Injection Pump • Turbine Driven Auxiliary Feedwater (AFW) Pump • 'B' ESW Pump Quantitative credit has been taken in the risk metric calculations for this condition.
6	Continuous fire watches in risk critical areas will be instituted on the protected train, which will include the following rooms: • 'B' Electrical Switchgear Room • 'B' Cable Spread Room • 'B' Battery Room Quantitative credit has been taken in the risk metric calculations for this condition.
7	Restrictions will remain in place on hot work and transient combustibles in the following rooms: • 'B' Electrical Switchgear Room • 'B' Cable Spread Room • 'B' Battery Room Qualitative Risk Impact.
8	Operators will be briefed on the procedures and guidance for the equipment lineup necessary for the proposed AOT activity. Quantitative credit has been taken in the risk metric calculations for this condition.
9	Operators will be briefed to improve operator response for ASI System actions. Quantitative credit has been taken in the risk metric calculations for this condition.
10	The 'B' ESW pump discharge pressure transmitter will be calibrated within three months prior to the proposed AOT. Quantitative credit has been taken in the risk metric calculations for this condition.
11	The 'B' ESW pump discharge strainer differential pressure will be checked when the 'B' ESW pump is in service and a backwash will be completed to verify it is clean within one month prior to the proposed AOT. This will ensure that the strainer is clean and capable of performing its duty during the AOT. Qualitative Risk Impact.
12	Switchgear Room in Turbine Building 286' will be posted protected, in order to minimize the risk to NSW power supplies. Qualitative Risk Impact.

#	CONDITIONS ASSOCIATED WITH ONE TIME TS CHANGE
13	Restrictions will be in place on switchyard work or other maintenance and testing that could cause a plant trip for the duration of the AOT. Additionally, the system load dispatcher will be contacted once per day to ensure no significant grid perturbations are expected during the extended AOT. Qualitative Risk Impact.
14	The FLEX ESW pump will be pre-staged in advance of the AOT entry to allow for connection to the 'A' Train ESW header, to provide alternate cooling to the 'A' EDG in the event of a loss of offsite power (LOOP). Dedicated personnel will be available to make the necessary equipment manipulations such that the 'A' EDG will be started within approximately one hour of the LOOP. The 'A' EDG will be manually started and operations will energize the necessary loads to perform the safety function of decay heat removal in the event of a LOOP. Quantitative Risk Impact.
15	All associated 'B' Train equipment for the Technical Specifications (TS) listed below, which are the only operable trains, are to be protected during the extended AOT. TS 3.1.2.4, "Charging Pumps – Operating" TS 3.5.2, "ECCS Subsystems – Tavg Greater Than or Equal To 350°F" TS 3.6.2.1, "Containment Spray System [CSS]" TS 3.6.2.2, "Spray Additive System" TS 3.6.2.3, "Containment Cooling System [CCS]" TS 3.7.1.2, "Auxiliary Feedwater [AFW] System" TS 3.7.3, "Component Cooling Water [CCW] System" TS 3.7.4, "Emergency Service Water System [ESWS]" TS 3.7.6, "Control Room Emergency Filtration System [CREFS]" TS 3.7.7, "Reactor Auxiliary Building [RAB] Emergency Exhaust System" TS 3.7.13, "Essential Services Chilled Water System [ESCWS]" TS 3.8.1.1, "AC Sources – Operating"
16	The Demineralized Water Storage Tank will be maintained between 29 and 34 feet for the duration of the AOT.
17	The following actions will be taken prior to and during the proposed AOT as described: • EDG cooling flow will be verified prior to the AOT entry. • 'B' EDG loading and operational check will be completed prior to the AOT entry. • 'B' ESW pump operational check will be completed prior to the AOT entry. • Proceduralized EDG inspections and checks will be performed daily for reliability during the AOT, which are normally completed weekly. • Freeze protection equipment as required and ventilation in the intake buildings will be verified as functional prior to the AOT. • Position of low head safety injection recirculation to Refueling Water Storage Tank isolation valves, 1SI-448 and 1SI-331, will be verified prior to the AOT, in addition to other SW valves that will support the clearance for the pump replacement.

SERIAL HNP-16-056

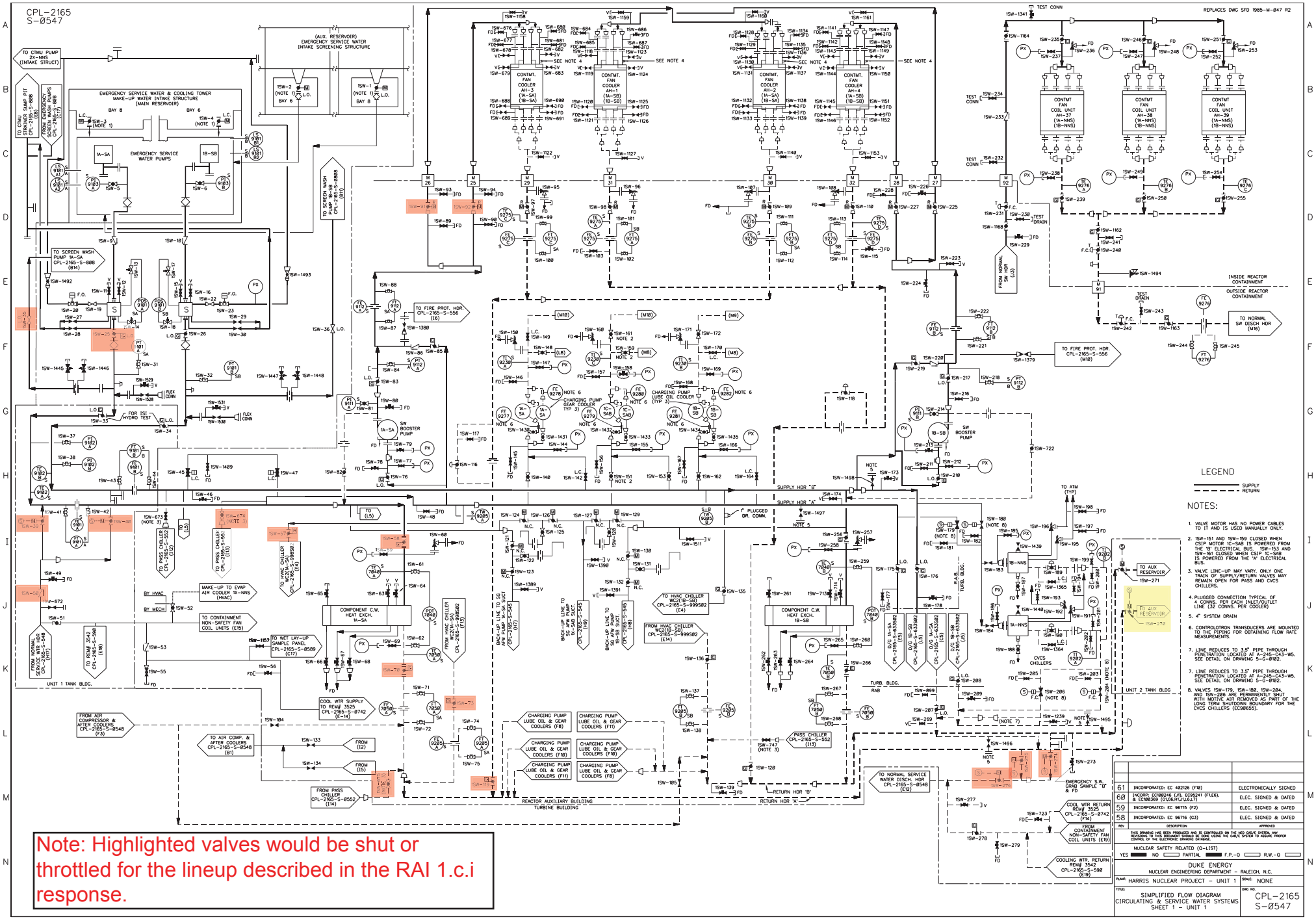
ATTACHMENT 5

SIMPLIFIED FLOW DIAGRAM OF THE CIRCULATING AND SERVICE WATER SYSTEMS

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

DOCKET NO. 50-400

RENEWED LICENSE NUMBER NPF-63



Note: Highlighted valves would be shut or throttled for the lineup described in the RAI 1.c.i response.