Carolyne Joseph
Site Vice President
Shearon Harris Nuclear Power Plant
P.O. Box 339
5413 Shearon Harris Road
New Hill, NC 27562-9300

10 CFR 50.90

August 14, 2026
Serial: RA-26-0138

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: License Amendment Request to Address Ultimate Heat Sink Level Requirement and Update Unit Staff Responsibility Requirement

Ladies and Gentlemen:

In accordance with the provisions of 10 CFR 50.90, Duke Energy Progress, LLC (Duke Energy), hereby requests a revision to the Technical Specifications (TS) for the Shearon Harris Nuclear Power Plant, Unit 1 (HNP). The proposed amendment will modify HNP TS 3/4.7.5, "Ultimate Heat Sink," to include an additional minimum water level limit requirement for each reservoir to be contained within the licensee-controlled Technical Requirements Manual (TRM). The proposed amendment will also update the TS to reflect that either the Auxiliary Reservoir or the Main Reservoir in an operable condition meets the associated Limiting Condition for Operation (LCO) for the Ultimate Heat Sink (UHS). An additional change is proposed to the Administrative Controls Section of the HNP TS to consolidate content from TS Table 6.2-1, "Minimum Shift Crew Composition," related to the responsibility of the person designated for control room command function into TS 6.1.2. This administrative change reflects requirements consistent with those in Revision 5 of NUREG-1431, "Standard Technical Specifications - Westinghouse Plants" (ADAMS Accession No. ML21259A155).

On January 7, 2026, Duke Energy and NRC staff participated in a pre-submittal meeting regarding the proposed revisions, with a summary report provided per letter dated January 16, 2026 (ADAMS Accession No. ML26012A384).

The proposed changes have been evaluated in accordance with 10 CFR 50.91(a)(1) using criteria in 10 CFR 50.92(c), and it has been concluded that the proposed changes involve no significant hazards consideration.

The enclosure to this license amendment request provides Duke Energy's evaluation of the proposed changes. In addition, Attachment 1 to the enclosure provides a copy of the existing TS pages marked with the proposed changes. For information only purposes, Attachment 2 contains the proposed update to the TRM to reflect the additional minimum water level limit, and Attachment 3 contains the existing TS Bases pages marked to show the proposed update. Changes to the TS Bases will be implemented in accordance with the TS Bases Control Program upon implementation of the respective amendment.

Approval of the proposed license amendment is requested on a schedule consistent with the NRC's graded review approach. The amendment shall be implemented within 120 days from approval.

In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the designated North Carolina State Official.

This letter contains no regulatory commitments.

Please refer any questions regarding this submittal to Ryan Treadway, Director – Nuclear Fleet Licensing, at 980-373-5873.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on August 14, 2026.

Sincerely,

Carolyne Joseph
Site Vice President
Shearon Harris Nuclear Power Plant

Enclosure: Evaluation of the Proposed Changes

Attachments:
1. Proposed Technical Specification Changes (Mark-up)
2. Proposed Technical Requirements Manual Changes (Mark-up)
3. Proposed Technical Specification Bases Changes (Mark-up)

cc:
U.S. NRC Senior Resident Inspector, HNP
U.S. NRC Project Manager, HNP
U.S. NRC Regional Administrator, Region II
L. Brayboy, Radioactive Materials Branch Manager, N.C. DHSR

U.S. Nuclear Regulatory Commission
Serial: RA-26-0138
Enclosure

ENCLOSURE

EVALUATION OF THE PROPOSED CHANGES

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

DOCKET NO. 50-400

RENEWED LICENSE NUMBER NPF-63

12 PAGES PLUS THE COVER

Evaluation of the Proposed Changes

License Amendment Request to Address Ultimate Heat Sink Level Requirement and Update Unit Staff Responsibility Requirement

1.0 SUMMARY DESCRIPTION

In accordance with the provisions of 10 CFR 50.90, Duke Energy Progress, LLC (Duke Energy), hereby requests a revision to the Technical Specifications (TS) for the Shearon Harris Nuclear Power Plant, Unit 1 (HNP). The proposed amendment will modify HNP TS 3/4.7.5, "Ultimate Heat Sink," to include an additional minimum water level limit requirement for each reservoir to be contained within the licensee-controlled Technical Requirements Manual (TRM). The proposed amendment will also update the TS to reflect that either the Auxiliary Reservoir or the Main Reservoir in an operable condition meets the associated Limiting Condition for Operation (LCO) for the Ultimate Heat Sink (UHS). An additional change is proposed to the Administrative Controls Section of the HNP TS to consolidate content from TS Table 6.2-1, "Minimum Shift Crew Composition," related to the responsibility of the person designated for control room command function into TS 6.1.2. This administrative change reflects requirements consistent with those in Revision 5 of NUREG-1431, "Standard Technical Specifications - Westinghouse Plants" (ADAMS Accession No. ML21259A155).

2.0 DETAILED DESCRIPTION

2.1 Background

Ultimate Heat Sink

As defined in Revision 2 of NRC Regulatory Guide 1.27, "Ultimate Heat Sink for Nuclear Power Plants" (ADAMS Accession No. ML003739969), of which HNP is committed, the UHS is that complex of water sources, including necessary retaining structures, and the canals or conduits connecting the sources within, but not including, the cooling water system intake structures for a nuclear power unit. The UHS performs two principal safety functions: (1) dissipation of residual heat after reactor shutdown, and (2) dissipation of residual heat after an accident. At HNP, the sources of water for normal and emergency cooling are the Cooling Tower and the Main or Auxiliary Reservoirs. The normal source of plant service water is the Circulating Water Cooling Tower. The preferred source of emergency cooling water, if the Cooling Tower is not available, is the Auxiliary Reservoir. The backup source of emergency service water is the Main Reservoir. Emergency service water from either source is discharged to the Auxiliary Reservoir.

License Amendment No. 80, issued per letter dated September 8, 1998 (ADAMS Accession No. ML020590029), increased the required minimum level of the Main Reservoir from the originally licensed 205.7 feet mean sea level (MSL) to 215 feet MSL. This change was based on the results of revised calculations and analyses to address NRC Generic Letter (GL) 89-13, "Service Water System Problems Affecting Safety-Related Equipment." License Amendment No. 132, as issued by letter dated October 14, 2009 (ADAMS Accession No. ML092640247), restored the minimum level in the UHS Main Reservoir back to 206 feet MSL (rounded up from original 205.7 feet MSL) as a result of improvements made to the emergency service water system.

Shift Technical Advisor (STA)

The Shift Technical Advisor (STA) provides advisory technical support to the Shift Manager in the areas of thermal hydraulics, reactor engineering, and plant analysis with regard to the safe operation of the unit. The STA is required to have a baccalaureate degree or equivalent in the scientific or engineering discipline and have received specific training in the response and analysis of the unit for transients and accidents, and in unit design and layout, including the capabilities of instrumentation and controls in the control room.

2.2 Current TS Requirements

The HNP TS are based upon the format and content of Revision 4 of the NUREG-0452, "Standard Technical Specifications for Westinghouse Pressurized Water Reactors" (ADAMS Accession No. ML102590431). As a result, the HNP TS numbers and associated Bases numbers differ from those contained in NUREG-1431.

TS 3.7.5

The HNP TS 3.7.5 LCO for demonstrating operability of the UHS states:

3.7.5 The ultimate heat sink shall be OPERABLE with:

a. the minimum auxiliary reservoir water level at or above elevation 250 feet Mean Sea Level, USGS datum, and a minimum main reservoir water level at or above 206 feet Mean Sea Level, USGS datum, and
b. A water temperature as measured at the respective intake structure of less than or equal to 94 °F.

TS Section 6.0 - Administrative Controls

HNP TS 6.1.2 addresses the responsibility of the Shift Manager as it relates to the control room command function, stating the following:

6.1.2 The Shift Manager (or, during his absence from the control room, a designated individual) shall be responsible for the control room command function.

HNP Administrative Control TS 6.2.2 addresses the required staffing for the unit. Specifically, TS Table 6.2-1 provides the minimum shift crew composition for each on-duty shift. This table also provides the following related to instances in which the Shift Manager is absent from the control room:

> During any absence of the Shift Manager from the control room while the unit is in MODE 1, 2, 3, or 4, an individual (other than the Shift Technical Advisor) with a valid Senior Operator license shall be designated to assume the control room command function. During any absence of the Shift Manager from the control room while the unit is in MODE 5 or 6, an individual with a valid Senior Operator license or Operator license shall be designated to assume the control room command function.

2.3 Reason for the Proposed Change

TS 3.7.5

The proposed change to TS 3.7.5 is based on a need to update a non-conservative TS limit. Specifically, the current minimum level requirement for the Main Reservoir provided in TS 3.7.5 would not meet the maximum fluid velocity limits described in the Updated Final Safety Analysis Report (FSAR) based upon current as-found sediment accumulation within the Emergency Service Water (ESW) / Containment Makeup (CTMU) Main Reservoir Intake Channel. The as-found sediment accumulation within the ESW Auxiliary Reservoir Intake Channel, ESW Discharge Channel, and West Auxiliary Reservoir Channel was found to be acceptable, so the sediment does not pose any issues with license requirements or design function performance for the Auxiliary Reservoir.

Provided that the minimum level limit of TS 3.7.5 has been adjusted twice before, as discussed in Section 2.1 above, the proposed change to add a level limit to the licensee-controlled TRM would allow for adjustments to the minimum required levels to meet the maximum fluid velocity limits to be processed in accordance with 10 CFR 50.59. This flexibility to adjust the limit to reflect a minimum required level that meets the maximum fluid velocity limits provided within the FSAR would eliminate the need to process additional licensing submittals to adjust these levels based on future as-found conditions or system improvements. There would be no change to the requirement to verify that adequate long-term (30-day) cooling can be maintained. A 30-day supply of water would remain available for the UHS to perform its design function, be it from the Auxiliary Reservoir or the Main Reservoir, as both are capable of providing the required volume of water.

TS Section 6.0 - Administrative Controls

The intent of the proposed administrative change to HNP TS 6.2.1 is to consolidate the requirements for the control room command function and make them consistent with those in Revision 5 of NUREG-1431.

2.4 Description of the Proposed Change

TS 3.7.5, Ultimate Heat Sink

The proposed change to TS 3.7.5 is as follows:

3.7.5 The ultimate heat sink shall be OPERABLE with **both**:

a. A minimum auxiliary reservoir water level at or above elevation 250 feet Mean Sea Level, USGS datum, and **above the respective limit provided in the Technical Requirements Manual, or** a minimum main reservoir water level at or above 206 feet Mean Sea Level, USGS datum, **and above the respective limit provided in the Technical Requirements Manual.**~~, and~~

b. A water temperature as measured at the respective intake structure of less than or equal to 94 °F.

TS Section 6.0 – Administrative Controls

The proposed change to HNP TS 6.1.2 will consolidate content from HNP TS Table 6.2-1 regarding the control room control function and make it consistent with Revision 5 of NUREG-1431. This includes removing the restriction on the Shift Technical Advisor from being designated to assume the control room command function during any absence of the Shift Manager from the control room while the unit is in MODE 1, 2, 3, or 4. Specifically, TS 6.1.2 will be revised to reflect the following:

> The Shift Manager ~~(or, during his absence from the control room, a designated individual)~~ shall be responsible for the control room command function. **During any absence of the Shift Manager from the control room while the unit is in MODE 1, 2, 3, or 4, an individual with an active Senior Reactor Operator (SRO) license shall be designated to assume the control room command function. During any absence of the Shift Manager from the control room while the unit is in MODE 5 or 6, an individual with an active SRO license or Reactor Operator license shall be designated to assume the control room command function.**

With the addition of the content above to HNP TS 6.1.2, the following content will be deleted from TS Table 6.2-1:

> ~~During any absence of the Shift Manager from the control room while the unit is in MODE 1, 2, 3, or 4, an individual (other than the Shift Technical Advisor) with a valid Senior Operator license shall be designated to assume the control room command function. During any absence of the Shift Manager from the control room while the unit is in MODE 5 or 6, an individual with a valid Senior Operator license or Operator license shall be designated to assume the control room command function.~~

3.0 TECHNICAL EVALUATION

TS 3.7.5

The UHS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii), which requires that an LCO exist for a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. When an LCO is not met, the licensee is required to shut down the reactor or follow any remedial action permitted by the TS until the condition can be met.

As provided in the Bases for HNP TS 3.7.5, the limitations on the UHS level and temperature ensure that sufficient cooling capacity is available either to: (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," Revision 2, January 1976.

Furthermore, the associated Improved Technical Specification (ITS) Bases content (ITS B 3.7.9) from NUREG-1431, “Standard Technical Specifications – Westinghouse Plants: Bases,” provides the following related to the LCO for the UHS:

> The UHS is required to be OPERABLE and is considered OPERABLE if it contains a sufficient volume of water at or below the maximum temperature that would allow the SWS [Service Water System] to operate for at least 30 days following the design basis LOCA without the loss of net positive suction head (NPSH), and without exceeding the maximum design temperature of the equipment served by the SWS. To meet this condition, the UHS temperature should not exceed [90°F] and the level should not fall below [562 ft mean sea level] during normal unit operation.

The HNP UHS is a collection of sources, where each reservoir (Auxiliary or Main) is capable of providing the 30-day cooling water supply and can function separately as the UHS to provide sufficient cooling capacity. While RG 1.27 stated that a second reservoir should be available, HNP has two fully capable reservoirs, that were approved for use by two units (Final Safety Evaluation Report NUREG-1038 was written for Units 1 and 2, while Unit 2 was never built). The TS 3.7.5 requirement is that both of these reservoirs (the collective UHS) meet their limits for both level and temperature to be able to deliver the sufficient cooling capacity needed to either 1) provide normal cooldown of the facility or 2) mitigate the effects of accident conditions within acceptable limits. The ability to take the cooling water supply to the associated safety-related equipment is a function of the ESW system, which per RG 1.27 starts at the cooling water system intake structures for a nuclear power unit.

Each ESW train is capable of pulling suction from either the Main or the Auxiliary Reservoir, dependent on which valves are locked open/closed. If the ESW trains are both pulling from the Auxiliary Reservoir, both trains of ESW are operable. If the ESW trains are both pulling from the Main Reservoir, both trains of ESW are operable. If one ESW train is pulling from the Main Reservoir and the other train is pulling from the Auxiliary Reservoir, both trains of ESW are operable. The UHS is a combination of sources, and as long as the ESW system is able to pull from a source of the UHS, and that source is able to provide a 30-day cooling water supply (at the required level and temperature), the UHS remains operable.

Furthermore, Section 2.4.11.7 of the HNP FSAR, “Heat Sink Dependability Requirements,” states:

> While at their minimum normal operation levels, both the Auxiliary and Main Reservoirs, taken separately, are more than adequate to permit emergency shutdown and cooldown of the plant. The Main Reservoir will function as a cooling reservoir in the case where the Auxiliary Reservoir is not available. The Auxiliary or Main Reservoir will function as cooling reservoirs during an emergency.

The HNP reservoir system constitutes the only water bodies that are of interest regarding protection of plant facilities from flood and wave runup. The only locations where potential blockage would be of concern to safe plant operation are the Emergency Service Water Intake and Discharge Channels, and the Auxiliary Reservoir Channel. These channels are Category I structures and are designed to remain stable when subjected to the Safe Shutdown Earthquake or the most severe cases of other postulated natural phenomena. In the unlikely event of a slide of the earth slopes, the size of the channels is sufficient to pass the minimum required service

water flow at a maximum velocity of 2 ft. per second under the conditions of maximum drawdown of the Main Reservoir and the Auxiliary Reservoir.

The maximum velocity of 2 ft. per second in the channels provides assurance that no blockage of the intake structures, damage to the intake structures or damage to the emergency service water pumps can occur.

The associated safety-related channels at HNP consist of the following:

- Auxiliary Reservoir ESW Intake Channel (1RV-ESW-IN)
- Auxiliary Reservoir ESW Discharge Channel (1RV-ESW-OUT)
- (West) Auxiliary Reservoir Channel (1RV-AUX-CHANNEL)
- Main Reservoir ESW/CTMU Intake Channel (1RV-CTMU-IN)

The table below provides the as-built elevations for the reservoir channel bottoms as well as illustrates the approximate accumulation in each of the four channels based on results of a 2023 hydrographic survey, along with licensing and design requirements. Of note, there are no tolerances provided to allow any amount of silting.

Table 1 – Comparison of centerline bottom elevations

	FSAR Channel Invert	1988 Max. Invert	2023 Max. Invert
ESW Auxiliary Reservoir Intake Channel	238’	240.5’	241.2’
- At intake structure	231’	231.2’	231.5’
ESW/CTMU Main Reservoir Intake Channel	194’	*Note	202.4’
- At intake structure	190’	*Note	190.8’
Auxiliary Reservoir Channel	235’	228.6’	228.3’
ESW Discharge Channel	240’	242.1’	242.3’

*Note – Historical measurements not available for comparison.

From the data above, it can be seen that silt accumulation in general is of low concern for the majority of the reservoir channels. Small changes in the maximum invert (highest low point of any single cross-section) elevations have occurred in the 35 years between surveys. The recent as-found sediment accumulation within the ESW Auxiliary Reservoir Intake Channel, ESW Discharge Channel, and West Auxiliary Reservoir Channel was found to be acceptable, and the sediment does not pose any issues with license requirements or design function performance.

The survey results for the Main Reservoir Intake Channel revealed that the channel would not meet the maximum fluid velocity limits described in the FSAR under the lowest Main Reservoir level conditions identified in TS 3.7.5.a. Notably, the additional silt at the channel bottoms does not represent any adverse impact to the seismic design of the channels. Additionally, the channels remain fully capable of performing their design functions at normal operating lake levels (i.e., approximately 218-220’ MSL). Accepting some level of sediment does not impact the design function so long as the bounding technical requirements are met at all postulated reservoir levels.

Maximum fluid velocity is directly attributable to the most limiting cross-section of the channel. The silt accumulation is not necessarily uniform and may deposit more heavily in different areas

based on flow direction and eddy currents. Thus, a single maximum invert dimension is not beneficial to characterize the impact of silting on channel fluid velocity.

Table 2 below converts the fluid velocity requirements into equivalent minimum required areas based on conservative design flows. Also shown are the actual available cross-sectional area results, estimated at the most limiting survey stations for each channel:

Table 2 – Minimum Required Areas

	Design Flow	Maximum Fluid Velocity (ft/s)	Minimum Required Area (ft^2)	Actual Area (ft^2)
ESW Auxiliary Reservoir Intake Channel	100 cfs @ 246.5' Elevation	1	100	>320
ESW Discharge Channel	100 cfs @ 246.5' Elevation	1	100	>161
ESW/CTMU Main Reservoir Intake Channel	100 cfs @ 203.59' Elevation	2	50	~18
West Auxiliary Reservoir Channel	2200 cfs @ 252' Elevation	2	1100	>>1888

Except for the ESW/CTMU Main Reservoir Intake Channel, simplified, conservative estimates reveal sufficient cross-sectional area margin for each of the channels. At the 30-day mark post-accident, with a minimum TS reservoir level (203.59' after evaporation and lake draw-down), the ESW/CTMU Main Reservoir Intake Channel would experience fluid velocities greater than 2 ft/s.

As mentioned in Section 2.1 above, License Amendment No. 132 restored the minimum level in the UHS Main Reservoir back to 206 feet MSL (rounded up from original 205.7 feet MSL) as a result of improvements made to the emergency service water system. This was a return of the minimum allowed level to the initial as-designed value approved by the NRC in the HNP Final Safety Evaluation Report, NUREG-1038.

An evaluation was performed that shows maintaining reservoir levels above 208' MSL will ensure that channel fluid velocities remain (conservatively) below 2 ft/s. Using the evaporation and draw-down conservatism for added margin results in a recommended lower operating limit of 210'. This would constitute the newly added TS limit for the Main Reservoir level to be maintained within the TRM. Associated operating procedures would be revised to reflect this new limit and Main Reservoir low level alarm setpoints would also be revised with additional margin to the 210 ft recommended operating limit.

The current configuration of the ESW Auxiliary Reservoir Intake Channel, ESW Discharge Channel, and West Auxiliary Reservoir Channel are acceptable with respect to channel flow velocities at minimum reservoir levels.

The proposed change to HNP TS 3.7.5 will maintain this as-designed value within the TS as a minimum limit, along with a new licensee-controlled value within the TRM that can be increased in accordance with 10 CFR 50.59 to reflect necessary increases in the minimum reservoir level to meet the maximum fluid velocity limits described in the FSAR. Updates to the TRM limit would reflect the results of periodic inspections of the reservoirs.

Furthermore, the proposed change does not alter the design or function of the UHS, does not result in any change in qualifications of any component, and does not result in the reclassification of any component's status in the areas of shared, safety-related, independent, redundant, and physically or electrically separated. Instead, the proposed change will ensure that the design function of the UHS continues to be met in instances where changes in

sedimentation level impact the necessary reservoir level to meet the FSAR maximum fluid velocity.

TS Section 6.0 – Administrative Controls

The proposed change to the TS content associated with periods of time in which the Shift Manager is absent from the control room is administrative and has no impact on actual unit staff qualifications or required staffing levels. Further, the proposed change to TS 6.1.2 makes it consistent with ITS 5.1.2 in NUREG-1431 and the note proposed for deletion in Table 6.2-1 is no longer necessary based on the proposed change to TS 6.1.2. The proposed change continues to ensure that no individual is assigned functions that will result in conflicting roles during design basis, fire, security or other events. The requirement that the individual assuming the control room command function have a valid SRO license is not impacted by this proposed change. Therefore, the proposed change remains consistent with the requirements of 10 CFR 50.36(c)(5).

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements and Guidance

10 CFR 50.36, "Technical specifications"

The NRC's regulatory requirements related to the content of the TS are set forth in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36, "Technical specifications." This regulation requires that the TS include items in the following five specific categories: (1) safety limits, limiting safety system settings, and limiting control settings, (2) limiting conditions for operation (LCO), (3) surveillance requirements, (4) design features, and (5) administrative controls.

Per 10 CFR 50.36(c)(2)(ii), a TS LCO must be established for each item meeting one or more of the following criteria:

Criterion 1: Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

Criterion 2: A process variable, design feature, or operating restriction that is an initial condition of a Design Basis Accident or Transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

Criterion 3: A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a Design Basis Accident or Transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

Criterion 4: A structure, system, or component which operating experience or probabilistic safety assessment has shown to be significant to public health and safety.

Per 10 CFR 50.36(c)(5), administrative controls are the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to

assure operation of the facility in a safe manner. Each licensee shall submit any reports to the Commission pursuant to approved technical specifications as specified in § 50.4.

Appendix A to Part 50, General Design Criteria (GDC) for Nuclear Power Plants

GDC 2, *Design bases for protection against natural phenomena*, requires that structures, systems, and components (SSCs) important to safety shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without loss of capability to perform their safety functions. The design bases for these SSCs shall reflect: (1) Appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area, with sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated, (2) appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena and (3) the importance of the safety functions to be performed.

GDC 44, *Cooling water*, requires, in part, that a system be provided to transfer heat from SSCs important to safety, to an ultimate heat sink. The system safety function shall be to transfer the combined heat load of these SSCs under normal operating and accident conditions.

GDC 45, *Inspection of cooling water system*, requires, in part, that the cooling water system be designed to permit appropriate periodic inspection of important components to assure the integrity and capability of the system.

GDC 46, *Testing of cooling water system*, requires, in part, that the cooling water system be designed to permit appropriate periodic pressure and functional testing to assure (1) the structural and leaktight integrity of its components, (2) the operability and the performance of the active components of the system, and (3) the operability of the system as a whole and, under conditions as close to design as practical, the performance of the full operational sequence that brings the system into operation for reactor shutdown and for loss-of-coolant accidents, including operation of applicable portions of the protection system and the transfer between normal and emergency power sources.

The proposed changes do not impact the design of the plant; therefore, these requirements remain satisfied.

NRC Standard Review Plan (SRP)

Guidelines provided in SRP Section 9.2.5, “Ultimate Heat Sink,” apply to the design of the UHS. This SRP section provides guidance for evaluating the capability of water sources for performing the UHS function in accordance with the requirements specified by the GDC listed above.

Regulatory Guide 1.27, “Ultimate Heat Sink for Nuclear Power Plants”

Revision 2 of Regulatory Guide (RG) 1.27, dated January 1976, describes a basis acceptable to the NRC staff that may be used to implement GDC 2 and 44 with regard to the UHS. As discussed in Section 1.8 of the HNP FSAR, HNP is in compliance with RG

1.27, Revision 2, with additional clarification provided for Regulatory Positions C.1.a and C.1.b. The proposed change adds a required level limit for the Main Reservoir and Auxiliary Reservoir to ensure the maximum fluid velocity limits described in the FSAR are also met and do not affect compliance with RG 1.27.

Conclusion

Duke Energy has evaluated the proposed changes against the applicable regulatory requirements described above. Based on this evaluation, there is reasonable assurance that the health and safety of the public will remain unaffected following the approval of these proposed changes.

4.2 Precedents

TS 3.7.5

No precedents were identified addressing the addition of minimum UHS level limits to a licensee-controlled document in order to meet the maximum fluid velocity limits described in the FSAR.

TS 6.1.2

The NRC issued an amendment to Turkey Point Nuclear Generating Station, Unit Nos. 3 and 4, per letter dated March 19, 2018 (ADAMS Accession No. ML18019A078), that revised TS 6.1.2 regarding the control room command function to consolidate information from TS Table 6.2-1 and make it consistent with the associated content in ITS 5.1.2 in NUREG-1431. The amendment also addressed several other items that are not within the scope of this particular submittal, including revising the TSs to remove certain reporting requirements, to remove the completion time for restoring spent fuel pool water level, to address inoperability of one of the two parallel flow paths in the residual heat removal or safety injection headers for the Emergency Core Cooling Systems, as well as other administrative changes.

4.3 Significant Hazards Consideration

Pursuant to 10 CFR 50.90, Duke Energy Progress, LLC (Duke Energy), hereby requests a revision to the Technical Specifications (TS) for the Shearon Harris Nuclear Power Plant, Unit 1 (HNP). The proposed amendment will modify HNP TS 3/4.7.5, “Ultimate Heat Sink,” to include an additional minimum water level limit requirement for each reservoir to be contained within the licensee-controlled Technical Requirements Manual (TRM). The proposed amendment will also update the TS to reflect that either the Auxiliary Reservoir or the Main Reservoir in an operable condition meets the associated Limiting Condition for Operation (LCO) for the Ultimate Heat Sink (UHS). An additional change is proposed to the Administrative Controls Section of the HNP TS to consolidate content from TS Table 6.2-1, “Minimum Shift Crew Composition,” related to the responsibility of the person designated for control room command function into TS 6.1.2. This administrative change reflects requirements consistent with those in Revision 5 of NUREG-1431, “Standard Technical Specifications - Westinghouse Plants” (ADAMS Accession No. ML21259A155).

Duke Energy has evaluated whether a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, “Issuance of amendment,” as discussed below:

(1) Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

Duke Energy is proposing a change to the UHS TS to add a minimum required level limit for the Main Reservoir and Auxiliary Reservoir to be contained within the licensee-controlled TRM in order to meet the maximum fluid velocity limits described in the Updated Final Safety Analysis Report (FSAR). The proposed amendment will also update the TS to reflect that either the Auxiliary Reservoir or the Main Reservoir operable meets the associated LCO for the UHS. An additional administrative change is proposed to consolidate content from TS Table 6.2-1 related to control room command function into TS 6.1.2. These proposed changes do not alter the function, design, or operating practices for plant systems or components. The UHS is utilized to remove heat loads from plant systems during normal and accident conditions. The UHS is not an initiator of any accident previously evaluated.

These proposed changes do not make changes to the physical plant or analytical methods. They do not adversely affect accident initiators or precursors nor alter the design assumptions, conditions, and configuration of the facility or the manner in which the plant is operated and maintained. The proposed changes do not alter or prevent the ability of structures, systems, or components from performing their intended function to mitigate the consequences on an initiating event with the assumed acceptance limits. The proposed changes do not affect the source term, containment isolation, or radiological release assumptions used in evaluating the radiological consequences of an accident previously evaluated. Further, the proposed changes do not increase the types and amounts of radioactive effluent that may be released offsite, nor significantly increase individual or cumulative occupational or public radiation exposure.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

(2) Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed changes neither install or remove any plant equipment, nor alter the design, physical configuration, or mode of operation of any plant structure, system, or component. The proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated in the FSAR. No new accident scenarios, failure mechanisms, or limiting single failures are introduced as a result of the proposed changes. Specifically, no new hardware is being added to the plant as part of the proposed changes, no existing equipment design or function is being modified, and no significant changes in operations are being introduced. No new equipment performance burdens are imposed.

Therefore, the proposed changes do not create the possibility of a new or different kind of

accident from any accident previously evaluated.

(3) Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No.

The proposed changes in this license amendment request do not alter the design, configuration, operation, or function of any plant system, structure, or component. The ability of any operable structure, system, or component to perform its designated safety function is unaffected by these changes. While there is the addition of new minimum required level limits for the Main Reservoir and Auxiliary Reservoir to be contained within the licensee-controlled TRM, the addition of these limits does not change the required volumes documented in the analysis of record. The volume of the UHS remains a requirement of the design analysis. The proposed changes do not alter any safety analysis assumptions, initial conditions, or results of any accident analyses. The proposed changes will not result in plant operation in a configuration outside the design basis.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

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

4.4 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATIONS

Duke Energy has determined that the proposed amendment qualifies for a categorical exclusion from environmental review in accordance with 10 CFR 51.22. The proposed action is an amendment regarding the installation or use of a facility component as described in 10 CFR 51.22(d)(8). The proposed action does not disturb any previously undisturbed ground and there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite, does not result in a significant increase in individual or cumulative public or occupational radiation exposure, and does not result in a significant increase in the potential for or consequences from radiological accidents. Therefore, pursuant to 10 CFR 51.22, neither an environmental assessment nor an environmental impact statement is required.

ATTACHMENT 1

PROPOSED TECHNICAL SPECIFICATION CHANGES (MARK-UP)

3 PAGES PLUS THE COVER

3/4.7.5 ULTIMATE HEAT SINK

both

LIMITING CONDITION FOR OPERATION

3.7.5 The ultimate heat sink shall be OPERABLE with:

a. ~~A minimum auxiliary reservoir water level at or above elevation 250 feet Mean Sea Level, USGS datum, and a minimum main reservoir water level at or above 206 feet Mean Sea Level, USGS datum, and~~ Replace with INSERT below

b. A water temperature as measured at the respective intake structure of less than or equal to 94°F.

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

ACTION:

With the requirements of the above specification not satisfied, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.5 The ultimate heat sink shall be determined OPERABLE at the frequency specified in the Surveillance Frequency Control Program by verifying the water temperature and water level to be within their limits.

INSERT

a. A minimum auxiliary reservoir water level at or above elevation 250 feet Mean Sea Level, USGS datum, and above the respective limit provided in the Technical Requirements Manual, or a minimum main reservoir water level at or above 206 feet Mean Sea Level, USGS datum, and above the respective limit provided in the Technical Requirements Manual.

6.1 RESPONSIBILITY

6.1.1 The plant manager shall be responsible for overall unit operation and shall delegate in writing the succession to this responsibility during his absence.

6.1.2 The Shift Manager ~~(or, during his absence from the control room, a designated individual)~~ shall be responsible for the control room command function.

ADD: INSERT (below)

6.2 ORGANIZATION

6.2.1 Onsite And Offsite Organization

An onsite and an offsite organization shall be established for unit operation and corporate management. The onsite and offsite organization shall include the positions for activities affecting the safety of the nuclear power plant.

a. Lines of authority, responsibility and communication shall be established and defined from the highest management levels through intermediate levels to and including all operating organization positions. Those relationships shall be documented and updated, as appropriate, in the form of organizational charts. These organizational charts will be documented in the FSAR and updated in accordance with 10 CFR 50.71(e).

b. There shall be an individual executive position (corporate officer) in the offsite organization having corporate responsibility for overall plant nuclear safety. This individual shall take any measures needed to ensure acceptable performance of the staff in operating, maintaining, and providing technical support in the plant so that continued nuclear safety is assured.

c. There shall be an individual management position in the onsite organization having responsibility for overall unit safe operation and shall have control over those onsite resources necessary for safe operation and maintenance of the plant.

d. Although the individuals who train the operating staff and those who carry out the quality assurance functions may report to the appropriate manager onsite, they shall have sufficient organizational freedom to be independent from operating pressures.

e. Although health physics individuals may report to any appropriate manager onsite, for matters relating to radiological health and safety of employees and the public, the health physics manager shall have direct access to that onsite individual having responsibility for overall unit management. Health physics personnel shall have the authority to cease any work activity when worker safety is jeopardized or in the event of unnecessary personnel radiation exposures.

INSERT:
During any absence of the Shift Manager from the control room while the unit is in MODE 1, 2, 3, or 4, an individual with an active Senior Reactor Operator (SRO) license shall be designated to assume the control room command function. During any absence of the Shift Manager from the control room while the unit is in MODE 5 or 6, an individual with an active SRO license or Reactor Operator license shall be designated to assume the control room command function.

TABLE 6.2-1

MINIMUM SHIFT CREW COMPOSITION

	NUMBER OF INDIVIDUALS REQUIRED TO FILL POSITION	
POSITION	MODE 1, 2, 3, or 4	MODE 5 or 6
SM	1	1
SRO	1	None
RO	2	1
AO	2	1
STA	1*	None

SM - Shift Manager with a Senior Operator license on Unit 1

SRO - Individual with a Senior Operator license on Unit 1

RO - Individual with an Operator license on Unit 1

AO - Auxiliary Operator - license not required

STA - Shift Technical Advisor

The shift crew composition may be one less than the minimum requirements of Table 6.2-1 for a period of time not to exceed 2 hours, in order to accommodate unexpected absence of on-duty shift crew members, provided immediate action is taken to restore the shift crew composition to within the minimum requirements of Table 6.2-1. This provision does not permit any shift crew position to be unmanned upon shift change due to an oncoming shift crewman being late or absent.

~~During any absence of the Shift Manager from the control room while the unit is in MODE 1, 2, 3, or 4, an individual (other than the Shift Technical Advisor) with a valid Senior Operator license shall be designated to assume the control room command function. During any absence of the Shift Manager from the control room while the unit is in MODE 5 or 6, an individual with a valid Senior Operator license or Operator license shall be designated to assume the control room command function.~~

* The STA position shall be manned in MODES 1, 2, 3, and 4 unless the Shift Manager or the individual with a Senior Operator license meets the qualifications for the STA as required by the NRC.

ATTACHMENT 2

PROPOSED TECHNICAL REQUIREMENTS MANUAL CHANGES

(FOR INFORMATION ONLY)

1 PAGE PLUS THE COVER

16.0 OPERATIONAL REFERENCES

16.10 Ultimate Heat Sink

REFERENCE: The Ultimate Heat Sink (UHS) minimum reservoir levels, as referenced by TECHNICAL SPECIFICATION 3.7.5.a, needed to meet the maximum fluid velocity limits described in the Updated Final Safey Analysis Report (FSAR) shall be listed in Table 16.10-1. These levels shall not be less than those approved by the NRC in NUREG-1038, “Safety Evaluation Report Related to the Operation of Shearon Harris Nuclear Power Plant, Units 1 and 2” (dated November 1983) and listed within TECHNICAL SPECIFICATION 3.7.5.a.

Ultimate Heat Sink Minimum Reservoir Water Levels

Table 16.10-1

Reservoir		Level approved in NUREG-1038 (Feet Mean Sea Level)	Minimum Level Limit (Feet Mean Sea Level)
1.	Auxiliary Reservoir	250	250
2.	Main Reservoir	205.7	210

ATTACHMENT 3

PROPOSED TECHNICAL SPECIFICATION BASES CHANGES (MARK-UP)

(FOR INFORMATION ONLY)

1 PAGE PLUS THE COVER

INSERT: The limits included within the Technical Requirements Manual reflect the respective minimum required level for each reservoir that meets the maximum fluid velocity limit provided within the Updated Final Safety Analysis Report.

BASES

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 heaters are not required for OPERABILITY since the carbon laboratory tests are performed at 95% relative humidity, but are maintained in the system to provide additional efficiency margin.

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 encompass other non-critical areas to which frequent personnel access or continuous occupancy is not necessary in the event of an accident. The CRE is protected during normal operation, natural events, and accident conditions. The CRE boundary is the combination of walls, floor, roof, ducting, doors, penetrations and equipment that physically form the CRE. The OPERABILITY of the CRE boundary must be maintained to ensure that the inleakage of unfiltered air into the CRE will not exceed the inleakage assumed in the licensing basis analysis of design basis accident (DBA) consequences to CRE occupants. The CRE and its boundary are defined in the Control Room Envelope Habitability Program.

The CREFS is an emergency system, parts of which may also operate during normal unit operation in the standby mode of operation. Upon receipt of the actuating signal(s), normal air supply to the CRE is isolated, and the stream of ventilation air is recirculated through the system filter trains. The prefilters or demisters remove any large particles in the air, and any entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal adsorbers. The demister is important to the effectiveness of the charcoal adsorbers.

Actuation of the CREFS places the system in the emergency mode (i.e., isolation with recirculation mode) of operation. Actuation of the system closes the unfiltered outside air intake and unfiltered exhaust dampers, and aligns the system for recirculation of the air within the CRE through the redundant trains of HEPA and charcoal filters. The emergency mode also allows for pressurization and filtered ventilation of the air supply to the CRE.