Attachment to July 18th, 2014
10 C.F.R. 2.206 Enforcement Petition
Florida Power & Light Company
Turkey Point Nuclear Plant

Attachment – Eleven

Letter from the Florida Power & Light Co. to the NRC dated July 10th, 2014 - License Amendment Request No. 231, Application to Revise Technical Specifications to Revise Ultimate Heat Sink Temperature Limit (21-pages).

FPL

10 CFR 50.90
L-2014-216
July 10, 2014

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

Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Renewed Facility Operating License Nos. DPR-31 and DPR-41

Subject: License Amendment Request No. 231, Application to Revise Technical Specifications to Revise Ultimate Heat Sink Temperature Limit

Pursuant to 10 CFR 50.90 and 10 CFR 50.91(a)(5), Florida Power & Light Company (FPL) hereby requests an amendment to the Technical Specifications (TS) for the Turkey Point Nuclear Plant (Turkey Point), Units 3 and 4.

The proposed amendment would revise the ultimate heat sink (UHS) water temperature limit from 100°F to 104°F. The cooling canal system (UHS) temperature has been recently trending higher than historical averages and has approached the current limit. Therefore, FPL requests a timely review of this application because of the potential for the current limit to be exceeded.

The enclosure to this letter contains a description of the proposed change and includes a no significant hazards determination and environmental considerations.

There are no new commitments made in this submission.

FPL requests that this application be approved by August 30, 2014.

The proposed change has been evaluated in accordance with 10 CFR 50.91(a)(1) using criteria in 10 CFR 50.92(c) and it has been determined that this change involves no significant hazards consideration.

The Turkey Point Plant Nuclear Safety Committee has reviewed and approved the proposed license amendment. In accordance with 10 CFR 50.91(b)(1), a copy of this letter is being forwarded to the State Designee of Florida.

Florida Power & Light Company
9760 SW 344th St., Florida City, FL 33035

A001
NRR

If you have any questions or require additional information, please contact Mr. Robert Tomonto at 305-246-7327.

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

Executed on: 7/10/14

Very truly yours,

Tom Conboy for Mike Kiley

Michael Kiley
Vice President
Turkey Point Nuclear Plant

Enclosure: Application to Revise Technical Specifications to Revise Ultimate Heat Sink Temperature Limit

cc: USNRC Regional Administrator, Region II
USNRC Project Manager, Turkey Point Nuclear Plant
USNRC Senior Resident Inspector, Turkey Point Nuclear Plant
Ms. Cindy Becker, Florida Department of Health

Turkey Point Units 3 and 4

License Amendment Request No. 231

Application to Revise Technical Specifications
To Revise Ultimate Heat Sink Temperature Limit

Enclosure

1.0 Description

Florida Power & Light Company (FPL) proposes a revision to the Ultimate Heat Sink (UHS) temperature limit from 100°F to 104°F.

2.0 Proposed Change

The proposed change would revise the UHS temperature limit in Technical Specification (TS) 3/4.7.4, Ultimate Heat Sink, from 100°F to 104°F. In addition, a new Surveillance Requirement (SR) would require more frequent monitoring (at least once per 6 hours) when UHS temperature exceeds 100°F.

2.1 Current TS and Bases

Current TS 3/4.7.4, addresses UHS system operability by requiring that the average supply temperature to the Intake Cooling Water (ICW) system be within specified limits:

Limiting Condition for Operation (LCO) 3/4.7.4 states:

> The ultimate heat sink shall be OPERABLE with an average supply water temperature less than or equal to 100°F.

APPLICABILITY is Modes 1, 2, 3, and 4.

The ACTION states:

> With the requirements of the above specification not satisfied, be in at least HOT STANDBY within 12 hours and In COLD SHUTDOWN within the following 30 hours. This ACTION shall be applicable to both units simultaneously.

SR 4.7.4 states:

> The ultimate heat sink shall be determined OPERABLE at least once per 24 hours by verifying the average supply water temperature* to be within its limit.

The asterisk (*) refers to a footnote that reads:

> Portable monitors may be used to measure the temperature.

TS Bases

The limit on Ultimate Heat Sink (UHS) temperature in conjunction with the SURVEILLANCE REQUIREMENTS of Technical Specification 3/4.7.2 will ensure that sufficient cooling capacity is available either: (1) To provide normal cool down of the facility, or (2) To mitigate the effects of accident conditions within acceptable limits.

FPL has the option of monitoring the UHS temperature by monitoring the temperature in the ICW system piping going to the inlet of the CCW Heat Exchangers. Monitoring the UHS temperature after the ICW but prior to CCW Heat Exchangers is considered to be equivalent to temperature monitoring before the ICW Pumps. The supply water leaving the ICW Pumps will be mixed and therefore, it will be representative of the bulk UHS temperature to the CCW Heat Exchanger inlet. The effects of the pump heating on the supply water are negligible due to low ICW head and high water volume. Accordingly, monitoring the UHS temperature after the ICW Pumps but prior to the CCW Heat Exchangers provides an equivalent location for monitoring the UHS temperature.

With the implementation of the CCW Heat Exchanger Performance Monitoring Program, the limiting UHS temperature can be treated as a variable with an absolute upper limit of 100°F without compromising any margin of safety. Demonstration of actual heat exchanger performance capability supports system operation with postulated canal temperatures greater than 100°F. Therefore, an upper TS limit of 100°F is conservative.

2.2 Proposed TS and Bases Changes

The proposed revision to TS 3/4.7.4:

LCO 3/4.7.4 would state:

> The ultimate heat sink shall be OPERABLE with an average supply water temperature less than or equal to 104°F.

APPLICABILITY remains unchanged.

ACTION required remains unchanged except for the correction of a typographical error. The capitalized word 'In' before the words 'COLD SHUTDOWN' is properly reduced to lower case because it is not at the beginning of the sentence. This is an administrative change that does not alter the required action. The typographical error was introduced when FPL provided the NRC retyped pages for License Amendments 260 and 255.

Current SR 4.7.4 would be revised as follows:

> 4.7.4 The ultimate heat sink shall be determined OPERABLE:
>
> a. At least once per 24 hours by verifying the average supply water temperature* to be within its limit.
>
> SR 4.7.4.b would be added:

b. Verify average supply water temperature* to be within the limit at least once per 6 hours when water temperature exceeds 100°F.

The asterisk (*) refers to a footnote that remains unchanged.

A mark-up of the proposed TS revision is attached.

Appropriate supporting TS Bases changes will also be performed in accordance with the TS Bases Control Program (TS 6.8.4.i).

3.0 Background

Turkey Point Units 1, 2, 3 and 4 use a closed system of cooling canals to support operation of the power plants. For nuclear units 3 and 4, the cooling canal system provides the coolant for the Circulating Water (CW) system and the Ultimate Heat Sink (UHS) for the Intake Cooling Water (ICW) system. The CW system provides cooling water to the main plant condensers. The ICW system removes heat loads from the Component Cooling Water (CCW) system during normal and accident conditions to support both reactor and containment heat removal requirements, and spent fuel cooling requirements. FPL proposes to revise the Turkey Point Unit 3 and Unit 4 licensing basis by amending Appendix A of Renewed Facility Operating Licenses DPR-31 and DPR-41 for Units 3 and 4 to incorporate an increase in the maximum allowable UHS temperature contained in TS 3/4.7.4.

In June 2014, UHS temperatures almost approached the currently analyzed maximum temperature of 100°F. Engineering and environmental analysis has determined that the cooling water heat transfer capability is diminished due to the presence of a higher than normal algae content. While immediate eradication of the algae is possible, there are biological impacts from a sudden algae die off and decay that must be mitigated and/or avoided. Thus, a controlled chemical treatment of the canal system over the course of several weeks is planned to gradually reduce the near-term algae content and improve heat transfer efficiency. If UHS temperatures were to exceed the current 100°F TS limit during the treatment period and ensuing summer months, a plant shutdown would have to be initiated in accordance with the action requirements of TS 3/4.7.4, increasing the possibility of a shutdown transient. Adoption of the proposed TS change would allow continued plant operation with measured UHS temperatures less than or equal to 104°F.

3.1 UHS Description and Design Basis

The UHS for Turkey Point Units 3 and 4 is provided by a closed cooling canal system located south of the plant. The canal system also serves the cooling needs of Turkey Point fossil units 1 and 2. The canal system occupies an area approximately 2 miles wide by 5 miles long and includes 168 miles of earthen canals covering approximately 6100 acres (4370 acres of water surface). The average canal depth is 2.8 feet. Total water volume in the cooling canals is approximately 12,300 acre-feet (4 billion gallons). The canals receive heated water from the fossil and nuclear plant equipment cooling systems at one end and supply cooled water at the other end for reuse. The discharge canal distributes the outflow into 32 feeder canals for cooling. Water in the feeder canals flows south and discharges to a single collecting canal that distributes water to six return canals. Water in the return canals flows north to the plant intake. The entire "water circuit," plant discharge back to plant intake, is 13.2 miles and takes approximately 44 hours to complete. Temperature rise across the plant, from intake to discharge, averages 15-30°F depending upon the number of fossil and nuclear units in operation, unit load, and various other factors. The average intake temperature is 2.5°F above the average ambient air temperature.

The units 3 and 4 CW and ICW systems pump the canal water to the various plant cooling water systems. The CW system (4 pumps) provides cooling water to the main plant condenser water boxes. The ICW system (sometimes called the service water system at other facilities) has three 100% capacity pumps and provides cooling water to three 50% capacity safety related CCW heat exchangers and two non-safety related Turbine Plant Cooling Water (TPCW) heat exchangers. In the event of an accident, the non-safety related TPCW heat exchangers are automatically isolated so that all ICW flow is diverted to the safety related CCW heat exchangers. The CCW system is an intermediate cooling system serving normal and emergency equipment loads. It provides the heat sink for the Chemical and Volume Control system (CVCS), the Spent Fuel Pit (SFP) Cooling system, the Normal Containment Cooling (NCC) system and various Reactor Coolant system (RCS) components during normal plant operation. The CCW system provides a heat sink for the Residual Heat Removal (RHR) system, Emergency Containment Cooling (ECC) system, and the High Head Safety Injection (HHSI) Pump Coolers during design basis accident conditions.

During a design basis accident (i.e., a loss-of-coolant accident), one ICW pump will provide all the cooling water required to two CCW heat exchangers for heat removal. The analyses of record assume that the cooling water supplied by the ICW pumps to the inlet of the CCW heat exchangers does not exceed 100°F.

The large break loss-of-coolant accident (LOCA) provides the design basis heat removal requirements for the CCW system with post-accident containment heat removal providing the bulk of the system heat load. Post-accident containment heat removal is provided by the ECC system and the Containment Spray (CS) system.

The ECC system uses the CCW system as a heat sink which is available upon ECC fan cooler actuation. The CS system initially relies on heat transfer to the lower temperature spray droplets as they pass through the containment atmosphere during the injection phase of emergency core cooling system operation. Following the transfer to long term containment sump recirculation, the CS system heat load is transferred to CCW system via the RHR system heat exchangers. The HHSI pump bearings are also cooled by the CCW system.

4.0 Technical Analysis

4.1 Basis for Proposed Technical Specification Changes

The proposed TS change increases the maximum allowable UHS temperature for operation of Units 3 and 4. Adoption of the proposed TS change will allow continued plant operation provided the measured UHS temperature does not exceed 104°F. The maximum allowable canal temperature would be 104°F (analytical limit) minus the measurement instrument uncertainty.

The maximum allowable UHS temperature satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). Accordingly, justification of the proposed TS change requires 1) confirmation that the increased UHS temperature continues to afford adequate post-accident heat removal capability, 2) confirmation that plant-specific assumptions previously credited in evaluating special events and regulatory issues are upheld by the proposed increase in UHS temperature, 3) confirmation that reliability of safety related equipment will not be impacted by the higher service temperature limit, and 4) confirmation that canal system performance will not be affected by the higher allowed water body temperatures.

4.1.1 Impact on Heat Removal/Accident Analysis Assumptions

Section 14.3.4.3.4 of the Updated Final Safety Analysis Report (UFSAR) provides the results of the containment integrity analyses performed for the large break LOCA and main steam line break (MSLB) accident inside containment. The LOCA containment integrity analyses are performed for a double-ended hot leg (DEHL) break and a double-ended pump suction (DEPS) break which is the limiting cold leg break location for Turkey Point Units 3 and 4. The MSLB containment integrity analysis is performed for a 1.0 ft^2 split break plus the additional mass and energy release resulting from failure of the main steam check valve on the faulted steam generator to isolate the non-faulted steam generator steam lines. The containment pressure profile for the DEHL break analysis is presented in UFSAR Figure 14.3.4.3-3. The containment pressure profile for the DEPS transient is presented in UFSAR Figure 14.3.4.3-5. The containment pressure transient for the limiting MSLB event is shown in UFSAR Figure 14.3.4.3-7.

For the LOCA analyses, the containment pressure is shown to initially peak and begin to decrease due to heat absorption by the containment internal structures, prior to active heat removal via operation of the safeguards equipment. In each case, the heat removal provided by the passive containment heat sinks is sufficient to prevent immediate containment overpresurrization. The peak containment pressure for the DEHL break occurs at 20 seconds prior to operation of the active containment heat removal systems which occurs at 50 seconds for the ECC system and 60 seconds for the CS system. Operation of the safeguards systems is sufficient to remove the additional decay heat transfer to containment that occurs following the initial blowdown phase. For the DEPS break, the passive containment heat sinks are similarly capable of preventing immediate containment overpressurization from the initial break release. However, as shown in Figure 14.3.4.3-5, operation of the containment heat removal systems is eventually required to prevent containment overpressurization from the subsequent decay heat release following the initial blowdown and reflood phases. At 24 hours following the DEPS break, containment pressure has been reduced to a value well below 50 percent of the peak calculated value.

For the MSLB analysis, the immediate heat removal capability provided by the passive containment heat sinks prevents an initial spike in containment pressure and provides the immediate protection for the containment boundary until the active containment heat removal systems are eventually actuated. The ECC system is actuated at 47.1 seconds and the CS system is actuated at 87.1 seconds. These systems provide additional heat removal capability to remove the continued mass and energy released to containment via the failed main steam check valve and faulted steam generator break opening.

Performance of the passive containment heat sinks is not affected by the proposed change in UHS temperature. The UFSAR containment integrity analyses were performed at an initial containment atmosphere temperature of 130°F which bounds the maximum containment atmosphere temperature allowance in the plant TS.

A technical evaluation of the CCW system was also performed to determine if ECC system and CS system performance would be affected by the proposed change in UHS temperature. It was determined that adequate margin exists in the CCW system such that post-accident CCW system supply and return temperatures would remain as currently analyzed in the containment integrity analyses. This ensures that the peak containment pressure is not altered by the proposed TS change. The technical evaluation confirmed that adequate CCW design margin would remain under the proposed operating conditions to allow a reasonable degree of equipment degradation to occur while demonstrating that the affected safety related components on the accident unit could continuously perform their design function as currently analyzed.

The Maximum Hypothetical Accident for Turkey Point involves an accident requiring safety injection (SI) on one unit which is accompanied by a sequential trip of the non-accident unit together with loss of all AC power to both nuclear units. This scenario provides the most limiting design condition for the emergency power system. A requirement for the non-accident unit is that adequate containment heat removal exists to prevent an inadvertent SI actuation during the shutdown due to increased transmitter errors caused by higher containment temperature conditions. The NCC fan coolers were replaced as part of Extended Power Uprate (EPU) modifications. The NCC modification confirmed that adequate heat removal would be available on the non-accident unit under EPU operating conditions. Since the proposed change in maximum UHS temperature does not affect containment heat sink performance or thermal performance of the CCW system, there is no decrease in the available margin to SI actuation on the non-accident unit.

The above assessment confirms that the proposed increase in UHS temperature will continue to satisfy the accident analysis assumptions for containment heat removal.

4.1.2 Impact on Accident Mitigation, Anticipated Operational Occurrences, and Safe Shutdown

The proposed change in UHS temperature will impact the inlet and outlet temperatures of the safety related ICW system. The ICW system cools the safety related CCW system which, in turn, cools the safety related equipment required for accident mitigation, anticipated operational occurrences, and safe shutdown.

As indicated in Section 4.1.1, above, the ECC system is credited in the plant safety analysis for post-accident containment heat removal. Evaluations performed in response to Generic Letter 96-06 demonstrate that the CCW system serving the ECC units is not susceptible to water hammer or overpressurization of isolated piping inside containment following a design basis accident such that containment integrity could be compromised. These evaluations are not affected by the proposed UHS limit because post-accident thermal performance of the CCW system is not diminished by the change in ICW system operation.

The impact of the increased UHS temperature limit on special events that the plant must be designed to withstand (e.g., station blackout, TS required cool down to cold shutdown conditions) is similarly unaffected because CCW system performance remains encompassed by the existing evaluations which demonstrate that the required equipment is capable of performing their design functions. Therefore, plant specific assumptions previously credited in evaluating special events and regulatory issues are not impacted by the proposed increase in the UHS temperature limit.

4.1.3 Impact on Plant Equipment Reliability

The proposed TS change increases the maximum allowable (measured) ICW system supply temperature from 100°F to 104°F. This change does not alter any assumptions on which the plant safety analysis is based. The affected components were originally designed with margin that allows for cooling water temperatures greater than the plant design basis of 100°F, although no credit had previously been taken for this margin. A review of ICW system components between the ICW pumps and the CCW and TPCW Heat Exchangers was performed for the increased UHS analytical temperature of 104°F. The specified design temperature for many of the components is 100°F which corresponds to the current UHS TS temperature limit. However, review of information specific to the affected components indicates that all ICW components between the pump and the heat exchangers are rated for service temperatures well in excess of 100°F. A review of ICW pump materials indicates that the projected 4°F increase in process fluid would have an insignificant affect on the materials in contact with the fluid, including thermal expansion and material temperature service rating.

In addition to material compatibility, a review of ICW pump operating parameters was performed for the increased UHS temperature condition. It was confirmed that reliability of the ICW pumps would not be adversely affected by the decrease in available net positive suction head associated with increased canal water temperatures.

The component reviews confirmed that a reasonable degree of margin for equipment degradation still exists such that the affected safety related components can continuously perform their design function at cooling water temperatures up to 104°F. Additionally, new limits for heat exchanger cleanliness will be procedurally controlled to ensure that the affected components would continue to function at the increased cooling water temperature.

4.1.4 Impact on Canal System Performance

The Turkey Point units (fossil and nuclear) use the canal system like a radiator, discharging heated water at one end and withdrawing cooled water at the other end for reuse. The heated discharge effluent is distributed to 32 feeder canals. Water in the feeder canals flows south, discharging into a single collector canal that distributes water to six return canals. Water in the return canals flows north to the plant intake. The transit time through the canal system is approximately 44 hours. Flows attributable to the nuclear units amount to approximately 1.3 million gallons per minute. Incident rainfall, some plant storm water runoff, treated process wastewater from the municipal supply, and, possibly, groundwater inflows compensate for evaporative cooling losses from this system.

The thermodynamic performance of the canal system is complex and influenced by many processes including:

1. Heat rejected to the canal by operating fossil and nuclear units,

2. Solar radiant heating,

3. Radiative cooling of the water body at night,

4. Conduction and convection of heat from the water body to the atmosphere,

5. Heat carried away by evaporation,

6. Heat transfer between the water body and the interior of the earth,

7. Cooling of the water body via precipitation, and

8. Cooling of the water body by ground water seepage.

Items 2 through 5 are influenced by weather parameters in effect such as dry bulb temperature, dew point, wind speed, and cloud cover. The temperature of the water at the discharge point does not comingle with the intake temperature and there is no possibility of short circuiting the cooling canal function. The discharged water must travel around the canal system prior to returning to the intake structure. The intake temperature is directly affected by the prevailing environmental conditions that exist during the approximate 2-day transit time from the discharge point to the intake point which are inherent characteristics of the canal system heat sink.

Since variability in weather conditions can affect canal heat transfer efficiency, the proposed SR requires that more frequent UHS temperature monitoring be performed when the UHS temperature is greater than 100°F to ensure that the maximum measured temperature does not exceed the 104°F limit. The proposed 6-hour time-frame to perform follow-up UHS temperature measurements is reasonable based on a review of actual canal temperature data recorded on July 4, 2014.

4.2 Analysis Input Changes and Methodology for Proposed Change

TS 3/4.7.2 provides the LCO and the SR for the CCW system. SR 4.7.2.b requires in part that a performance test of the CCW heat exchangers be conducted at least once per 31 days to verify the post-accident heat removal capability. This SR is conducted by measuring the CCW heat exchanger inlet/outlet temperatures and ICW flow, and calculating the associated heat exchanger tube resistance using the Turkey Point HX3/HX4 computer program.

The Turkey Point HX3/HX4 computer program determines CCW heat exchanger performance based on the conservation of energy equations for heat transfer between the ICW and CCW systems, and the performance equation for the heat exchanger. The heat gain (to the ICW system) is equal to the heat lost (from the CCW system) and is also equal to the heat transferred within the heat exchanger as described by the total surface area, the heat exchanger heat transfer coefficient, and the logarithmic mean temperature difference, LMTD.

The HX3/HX4 computer program allows for fouling (or tube resistance (TR)) above the fouling factor used in the safety analyses provided that the actual UHS temperature is lower than the maximum allowed temperature predicted for the current heat exchanger conditions. Based on the surveillance data, the program determines the current CCW heat exchanger TR and provides the user with a maximum allowable UHS temperature associated with that TR. Provided the maximum allowable UHS temperature is maintained for the current TR, the CCW heat exchangers will support at least as much heat transfer as required by the plant safety analyses.

The figure below illustrates the relationship between CCW heat exchanger TR and UHS temperature used by the HX3/HX4 program. As shown, the TR calculated by the program will be conservatively lower than the TR used in the safety analysis for all UHS temperatures:

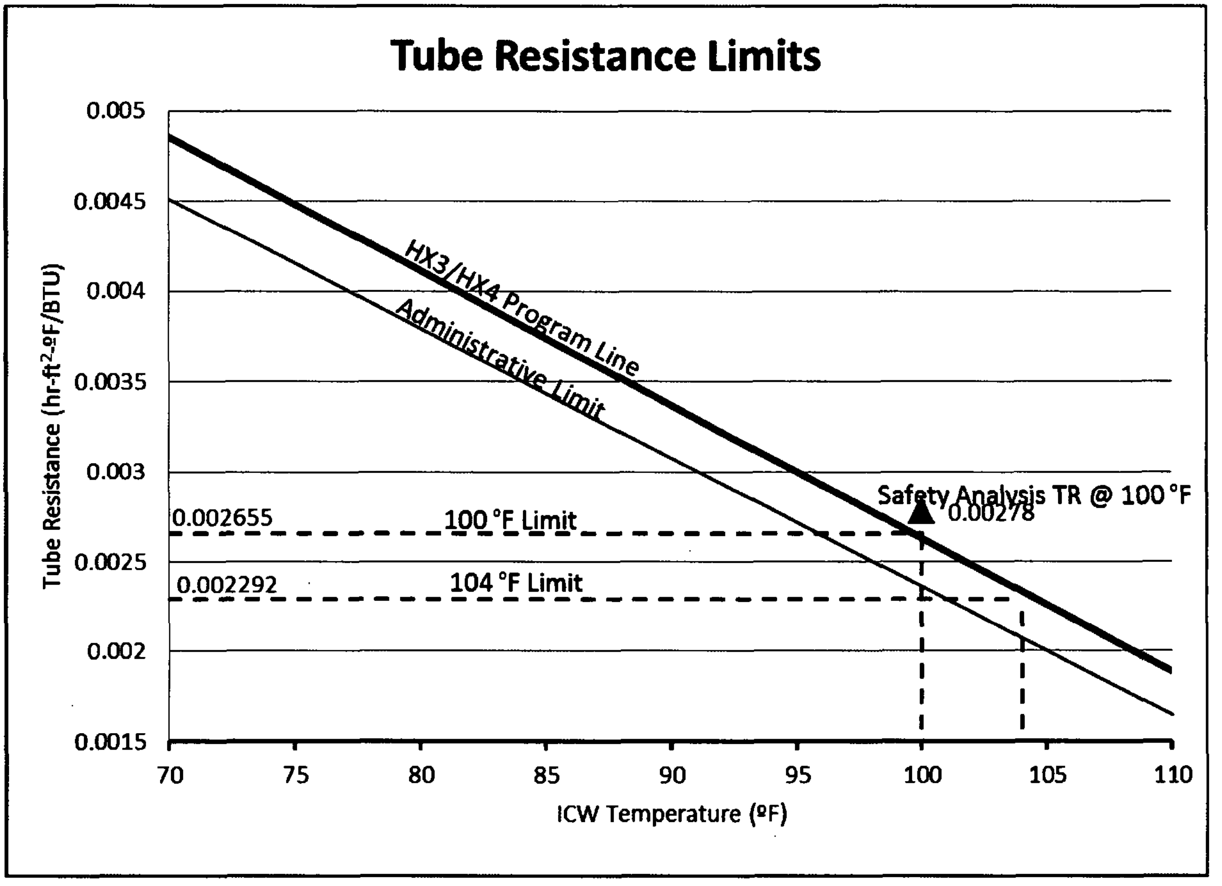

Figure 3.5-1: Tube Resistance Limit

Note that a 3°F reduction in the maximum allowable UHS temperature calculated by the program is applied to provide operational margin to the analytical limit. When the measured UHS temperature is within 3 degrees of the average performance of the two most fouled heat exchangers, Operations personnel declare the most fouled heat exchanger out of service and request that it be cleaned by plant Maintenance personnel. Cleaning frequency is dictated by both actual plant conditions as described and station desires to create a predictable schedule for maintenance resources.

In order to develop the HX3/HX4 computer program, a design basis case needs to be established. The program requires four inputs to define a design basis case: 1) CCW inlet temperature, 2) CCW outlet temperature, 3) ICW flow rate, and 4) heat load. The design basis case is determined by first finding the most limiting safety analysis case. Once the most limiting case is found, several iterations are performed on calculating the TR and maximum allowable temperatures. The design basis cases embedded in the program and verification cases are created to verify the CCW heat exchangers, at a minimum, remove the necessary heat for the corresponding safety and cool down scenarios at a given UHS temperature.

The HX3/HX4 computer program is used as the technical basis supporting the requested increase in UHS temperature limit. Analyses were performed to confirm continued compliance with the containment integrity analysis, and continued capability to complete a plant cool down to cold shutdown conditions within required time limits.

Table 3.5-1 identifies the UHS temperatures that were used in the current and revised analyses.

Table 3.5-1 UHS Temperatures Used in CCW Thermal Analyses

Current Temperature (°F)	Revised Temperature (°F)	Time Interval	Type of Analysis Used In
92	95.16	Spring/Fall	Plant Cool Down
97	98.2	Summer	Plant Cool Down
100	104	Year-Round	Accident

Details of the analyses are discussed below.

Safety Analyses Scenarios

The calculation for CCW heat exchanger performance was revised using the HX3/HX4 computer program to demonstrate that the CCW heat exchangers can remove the necessary post-accident containment heat load for the LOCA and MSLB containment integrity analyses. The revised calculation uses the program to calculate the TR at different UHS temperatures (i.e. 104°F). By using the conservation of energy equations for heat transfer between the ICW and CCW systems and the performance equation for the heat exchanger, it calculates the heat transfer capability of the heat exchanger. If the predicted heat exchanger heat removal is greater than the safety analysis heat load, then the CCW heat exchangers are capable of removing the safety analysis heat load at the given UHS temperature. Since neither the HX3/HX4 Program Line, nor the administrative limit has changed, the CCW heat exchangers will support at least as much heat transfer as assumed during the plant safety analyses. As shown in Figure 3.5-1, the design basis heat load can be adequately dissipated to maintain containment integrity without any changes in CCW system flow rates, or CCW supply and return temperatures. Accordingly, the safety analyses remain unchanged.

Plant Cool Down Scenarios

The plant cool down analyses for Turkey Point use a "best estimate" approach to demonstrate the capability to complete a cool down to cold shutdown conditions within the required time frame. The limiting scenario involves an Appendix R cool down during the summer season. The scenario models the cool down using a single CCW train alignment (1 CCW pump to 2 CCW heat exchangers) with only one RHR heat exchanger in service.

The revised calculation maintains the same CCW heat load condition but increases the UHS temperature from 97°F to 98.2°F. The higher UHS temperature value of 98.2°F is based on historical UHS data for a two year period between 2012 and 2014, and reflects a 95/95 tolerance limit. The revised calculation demonstrates that the cool down scenario can still be accomplished within the required time period with increased UHS temperatures.

A plant cool down to cold shutdown conditions for TS compliance was also re-analyzed with a higher UHS temperature. The new UHS temperature values similarly reflect a 95/95 tolerance limit. The revised calculation demonstrates that the normal plant cool down to cold shutdown is still within the 36-hour time duration required by TS.

5.0 Regulatory Analysis

10 CFR 50.91 (a)(1) requires that licensee requests for operating license amendments be accompanied by an evaluation of significant hazards posed by the issuance of the amendment. FPL has evaluated this proposed amendment with respect to the criteria given in 10 CFR 50.92(c).

A necessary element of plant operation is the removal of the heat generated by the power generation process. This includes both the removal of heat during routine operation and removal of heat as part of mitigating accidents and transients that are postulated to occur.

This license amendment request proposes to increase the temperature limit for the UHS from its current limit of 100°F to 104°F.

FPL has evaluated whether or not a significant hazards consideration is involved with the proposed change. A discussion of these standards as they relate to this change request is provided below:

5.1 No Significant Hazards Consideration Evaluation

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

Response: No

The ultimate heat sink (UHS) is not an accident initiator. An increase in UHS temperature will not increase the probability of occurrence of an accident. The proposed change will allow plant operation with a UHS temperature less than or equal to 104°F. Maintaining UHS temperature less than or equal to 104°F ensures that accident mitigation equipment will continue to perform its required function, thereby ensuring the consequences of accidents previously evaluated are not increased. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No

The proposed change will not install any new or different equipment or modify equipment in the plant. The proposed change will not alter the operation or function of structures, systems or components. The response of the plant and the operators following a design basis accident is unaffected by this change. The proposed change does not introduce any new failure modes and the design basis heat removal capability of the safety related components is maintained at the increased UHS temperature limit. Therefore, the proposed change will not create the possibility of a new or different kind of accident from any previously evaluated.

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

Response: No

The increase in UHS temperature will not adversely affect design basis accident mitigation equipment performance. It was determined that adequate margin exists in the CCW system such that post-accident CCW system supply and return temperatures would remain as currently analyzed in the containment integrity analyses such that the peak containment pressure is not altered by the proposed TS change. The technical evaluation confirmed that adequate CCW design margin would remain under the proposed operating conditions to allow a reasonable degree of equipment degradation to occur while demonstrating that the affected safety related components could continuously perform their design function as currently analyzed. Therefore, the proposed change does not involve a significant reduction in the margin of safety.

Conclusion

Based on the above, FPL 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.

5.2 Applicable Regulatory Requirements/Criteria

10 CFR 50, Appendix A General Design Criteria (GDC) 44, 45 and 46 apply to the cooling water system for transfer of heat from structures, systems, and components important to safety to an ultimate heat sink. Turkey Point was initially licensed to the 1967 proposed draft GDC.

ICW system design and operation is discussed in UFSAR Section 9.6.2.

CCW system design and operation is discussed in UFSAR Section 9.3.

6.0 Environmental Consideration

There are no changes to the plant discharge temperature limits as specified in the Turkey Point discharge permit in response to an increase in maximum intake temperature limit to 104°F. Plant discharge limits are a function of the quantity of heat rejected to the canal system during plant operation and are not intake temperature limited.

10 CFR 51.22(c) provides criteria for, and identification of, licensing and regulatory actions eligible for categorical exclusion from performing an environmental assessment. 10 CFR 51.22 (c)(9) identifies a proposed amendment to an operating license for a facility as a categorical exclusion not requiring an environmental assessment or environmental impact statement if operation of the facility, in accordance with the proposed amendment, would not involve: (i) a significant hazards consideration; (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite; or, (iii) a significant increase in individual or cumulative occupational radiation exposure.

FPL has reviewed the proposed license amendment and concludes that it meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). The following is the basis for this determination.

i. The proposed license amendment does not involve a significant hazards consideration as described previously in the No Significant Hazards Consideration Evaluation in Section 5.1 above.

ii. The proposed change is to increase the temperature limit for the UHS. The proposed change will not result in a significant increase in radiological doses for any design basis accident as discussed in Sections 4.1.1 and 4.1.2 above. The proposed change does not result in a significant change in the types or significant increase in the amounts of effluents that may be released offsite. There will be a slight increase in the temperature of the plant cooling water effluent, but the effect is small and manageable, has no effect on radiological releases, and the effluent is limited by the plant discharge permit. Therefore, there will not be a significant increase in the types or amounts of effluents that may be released offsite.

iii. The increased cooling water inlet temperature that would be allowed under the proposed changes will not result in any increase in individual or cumulative occupational radiation exposure.

Accordingly, the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7.0 Conclusions

Based on the review of the Turkey Point Units 3 and 4 design bases and supporting technical evaluations, it has been determined that the proposed TS change will not adversely affect plant operation, jeopardize the performance of safety related equipment, or otherwise compromise public health and safety. Therefore, the proposed change to TS 3/4.7.4, which increases the maximum measured UHS temperature from 100°F to 104°F, is justified.

8.0 Precedent

Millstone Power Station Unit No.2, Amendment No. 318 dated April 18, 2014 (TAC No. MF1779)

9.0 Attachment

Attachment - Proposed Technical Specification Page 3/4 7-17 Mark-up

Attachment

Proposed Technical Specification Changes

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3/4.7.4 ULTIMATE HEAT SINK

LIMITING CONDITION FOR OPERATION

3.7.4 The ultimate heat sink shall be OPERABLE with an average supply water temperature less than or equal to 100°F.

4

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

ACTION:

With the requirements of the above specification not satisfied, be in at least HOT STANDBY within 12 hours and in COLD SHUTDOWN within the following 30 hours. This ACTION shall be applicable to both units simultaneously.

i

SURVEILLANCE REQUIREMENTS

:

4.7.4 The ultimate heat sink shall be determined OPERABLE ~~at least once per 24 hours by verifying the average supply water temperature* to be within its limit~~.

a. At least once per 24 hours by verifying the average supply water temperature* to be within its limit.

b. Verify average supply water temperature* to be within the limit at least once per 6 hours when water temperature exceeds 100°F.

*Portable monitors may be used to measure the temperature.