

ATTACHMENT B

**MARKED UP PAGES FOR
PROPOSED CHANGES TO APPENDIX A, TECHNICAL SPECIFICATIONS,
OF FACILITY OPERATING LICENSES
NPF- 37 and NPF - 66**

**BYRON NUCLEAR POWER STATION
UNITS 1 and 2**

Revised Pages

3/4 7-13
3/4 7-14
3/4 7-14a
3/4 7-15
B 3/4 7-3
B3/4 7-4

PLANT SYSTEMS

3/4.7.5 ULTIMATE HEAT SINK

LIMITING CONDITIONS FOR OPERATION

3.7.5 The ultimate heat sink (UHS) shall be OPERABLE with:

- a. A water level in each of the UHS cooling tower basins of at least ~~50%~~ ^{60%} ^(at least)
- b. A total of 6 fans OPERABLE (high speed),
- c. Two OPERABLE essential service water makeup pumps,
- d. An essential service water pump discharge temperature of ~~less than or equal to 80°F or less than or equal to 96°F with all OPERABLE fans running in high speed,~~ ^{Insert A}
- e. Two OPERABLE UHS cooling tower basin level switches,
- f. The National Weather Service (NWS) does not forecast the Rock River level to exceed 702.0 feet MSL,
- g. Rock River water level greater than 670.6 feet MSL, and
- h. The National Weather Service (NWS) has not issued a tornado watch that includes the Byron Site Area.

APPLICABILITY: MODES 1, 2, 3, and 4

ACTION:

- a. With a water level of less than ~~50%~~ ^{60%} in either UHS cooling tower basin, restore the water level to at least ~~50%~~ ^{60%} in each UHS cooling tower basin within 6 hours or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With only 5 fans OPERABLE, within 1 hour verify the 5 OPERABLE fans are capable of being powered by their respective emergency diesel generators. Restore at least 6 fans to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

INSERT A

- 1) $\leq 80^{\circ}\text{F}$; or
- 2) $\leq 90^{\circ}\text{F}$, with 6 OPERABLE fans running in high speed; or
- 3) $\leq 96^{\circ}\text{F}$, with > 6 OPERABLE fans running in high speed.

LIMITING CONDITION FOR OPERATION (Continued)

ACTION (Continued)

c. With one essential service water makeup pump inoperable, within 72 hours either:

- 1) Restore the inoperable essential service water makeup pump to OPERABLE status, or
- 2) Verify that the same train deep well pump is OPERABLE with both UHS cooling tower basin levels $\geq 82\%$. Continue to verify both basin levels are $\geq 82\%$ every two hours and restore the inoperable essential service water makeup pump to OPERABLE status within *7 days. (*This can be extended to 14 days for Essential Service Water Makeup pump inspection and extended maintenance during the time when at least one unit is in MODE 5 or 6.) The provisions of Specification 3.0.4 are not applicable.
- 3) Otherwise be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

d. With the essential service water pump discharge water temperature not meeting the above requirement, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

e. 1) With one UHS cooling tower basin switch inoperable:

a) Restore the level switch to OPERABLE status within 72 hours or verify both basin levels are $\geq 82\%$ within the next hour and every 2 hours thereafter. The provisions of Specification 3.0.4 are not applicable.

b) Otherwise be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

2) With both UHS cooling tower basin level switches inoperable:

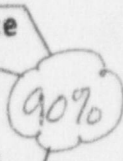


a) Restore one level switch to OPERABLE status within 1 hour and follow the provisions of 3.7.5.e.1 above, or verify both basin levels are $\geq 82\%$ within the next hour and every 2 hours thereafter. The provisions of Specification 3.0.4 are not applicable.

b) Otherwise be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

3) With any UHS cooling tower basin level switch inoperable for more than 30 days, prepare and submit a special report to the Commission pursuant to Specification 6.9.2 within the next 10 days outlining the cause of the inoperability and the plans for restoring the switch(es) to OPERABLE status.

f. With Rock River water level forecasted by NWS to exceed 702.0 feet MSL:

LIMITING CONDITION FOR OPERATION (Continued)ACTION (Continued)

- 1) Within one hour verify that both deep well pumps are OPERABLE with both UHS cooling tower basin levels $\geq 82\%$ and at least once every 2 hours thereafter, verify both basin levels are $\geq 82\%$. The provisions of Specification 3.0.4 are not applicable. 
 - 2) With one deep well pump inoperable restore both deep well pumps to OPERABLE status with both basin levels $\geq 82\%$ before the Rock River level exceeds 702 feet MSL or within 72 hours, whichever comes first and follow provisions of ACTION f.1).
 - 3) Otherwise be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- g. With Rock River water level at or below 670.6 feet MSL within one hour verify Rock River level and flow, and:
- 1) If Rock River level > 664.7 feet MSL and flow ≥ 700 cfs verify Rock River level > 664.7 feet MSL and flow ≥ 700 cfs every 12 hours thereafter. The provisions of Specification 3.0.4 are not applicable.
 - 2) If Rock River level ≤ 664.7 feet MSL or flow < 700 cfs, within one hour:
 - a) Verify that both deep well pumps are OPERABLE with both UHS cooling tower basin levels $\geq 82\%$ and at least once every 2 hours thereafter, verify both basin levels are $\geq 82\%$. The provisions of Specification 3.0.4 are not applicable. 
 - b) With one deep well pump inoperable, within 72 hours restore both deep well pumps to OPERABLE status with both basin levels $\geq 82\%$ and follow provisions of ACTION g.2)a).
 - c) Otherwise be in at least HOT STANDBY within the next 6 hours and at least HOT SHUTDOWN within the following 6 hours and at least COLD SHUTDOWN within the subsequent 24 hours.
- h) With a tornado watch issued by NWS that includes Byron site area:
- 1) Within one hour verify that both deep well pumps are OPERABLE with both UHS cooling tower basin levels $\geq 82\%$ and at least once every 2 hours thereafter, verify both basin levels $\geq 82\%$. The provisions of Specification 3.0.4 are not applicable. 
 - 2) With one deep well pump inoperable, within 30 minutes take action to restore both deep well pumps to OPERABLE status with both basin levels $\geq 82\%$ and at least once every 2 hours thereafter, verify both basin levels $\geq 82\%$.
 - 3) Otherwise be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS

4.7.5 The UHS shall be determined OPERABLE at least once per:

- a. 24 hours by verifying the water level in each UHS cooling tower basin to be greater than or equal to 50%, ^{60%}
- b. 24 hours by verifying the essential service water pump discharge water temperature is within its limit,
- c. 24 hours by verifying that the Rock River water level is within its limits,
- d. 31 days by starting from the control room each UHS cooling tower fan that is required to be OPERABLE and not already in high speed operation and operating each of those fans in high speed for at least 15 minutes,
- e. 31 days by
 - 1) Verifying that the fuel supply for each diesel powered essential service water makeup pump is at least 36% of the fuel supply tank volume,
 - 2) Starting the diesel from ambient conditions on a low basin level test signal and operating the diesel powered pump for at least 30 minutes,
 - 3) Verifying that each valve (manual, power operated, or automatic) in the flow path is in its correct position,
 - 4) Starting each deep well pump and operating it for at least 15 minutes and verifying that each valve (manual, power-operated, or automatic) in the flow path is in its correct position,
- f. 92 days by verifying that a drain sample of diesel fuel from the fuel storage tank, obtained in accordance with ASTM D4057-1981, is within the acceptable limits specified in Table 1 of ASTM-D975-1977 when checked for viscosity, water, and sediment,
- g. 18 months by performing a CHANNEL CALIBRATION on each of the UHS cooling tower basin level switches,
- h. 18 months by subjecting each diesel that powers an essential service water makeup pump to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for the class of service and by cycling each testable valve in the flow path through at least one complete cycle of full travel,
- i. 18 months by verifying each deep well pump will provide at least 550 gpm flow rate, and
- j. 18 months by visually inspecting and verifying no abnormal breakage or degradation of the fill materials in the UHS cooling tower.

PLANT SYSTEMS

BASES

3/4.7.1.5 MAIN STEAM LINE ISOLATION VALVES

The OPERABILITY of the main steam line isolation valves ensures that no more than one steam generator will blowdown in the event of a steam line rupture. This restriction is required to: (1) minimize the positive reactivity effects of the Reactor Coolant System cooldown associated with the blowdown, and (2) limit the pressure rise within containment in the event the steam line rupture occurs within containment. The OPERABILITY of the main steam isolation valves within the closure times of the Surveillance Requirements are consistent with the assumptions used in the safety analyses.

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

The limitation on steam generator pressure and temperature ensures that the pressure-induced stresses in the steam generators do not exceed the maximum allowable fracture toughness stress limits. The limitations of 70°F and 200 psig are based on a steam generator RT_{NDT} of 60°F and are sufficient to prevent brittle fracture.

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 ESSENTIAL SERVICE WATER SYSTEM

The OPERABILITY of the Essential 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 accident conditions within acceptable limits.

The OPERABILITY of the unit crosstie along with the availability of an Essential Service Water pump in the shut down unit ensures the availability of sufficient redundant cooling capacity for the operating unit.

3/4.7.5 ULTIMATE HEAT SINK

The limitations on the ultimate heat sink ensure 1) sufficient cooling capacity is available for continued operation of safety related equipment during normal and accident conditions and 2) adequate inventory is available to provide a 30-day cooling water supply to safety related equipment. The limiting design basis event for the UHS is a loss of coolant accident coincident with a loss of offsite power on one unit, in conjunction with the other unit proceeding to an orderly shutdown and cooldown from maximum power to Mode 5, assuming a single active failure. *Insert B*

non-accident

PLANT SYSTEMS

BASES

ULTIMATE HEAT SINK (Continued)

The minimum UHS cooling tower basin water level of ~~50%~~ indicated Insert C (873.75 feet above Mean Sea Level) and the service water pump discharge temperature limits assure that adequate thermal capacity is available in the SX water inventory to absorb the initial accident heat input. ~~Six of eight cooling tower fans are required to be operable so that the required number of fans are available after a single active failure. The SX cooling tower basin temperature will remain less than 100°F.~~ Insert D UHS cooling tower

A volume of 200,000 gallons in each cooling tower basin is available to supply the auxiliary feedwater system. The basin inventory is also available for transporting heat from safety related equipment during normal and accident conditions. Due to evaporation, blowdown, and auxiliary feedwater supply the basin inventory alone is not adequate for the required 30-day cooling water supply, therefore makeup systems are provided to replenish the basin inventory. Insert E

Adequate inventory is maintained by the SX makeup system that uses the Rock River as a water source. The SX makeup system is designed to withstand all design basis natural phenomena events and combination of events except for seismic events during low Rock River flow or level (loss of SX makeup pump suction), tornado, and river flood. A backup makeup system uses the deep wells as a water source. The deep well system is designed for seismic, tornado, and river flood events.

Each essential service water makeup pump is powered by a diesel engine with a fuel supply adequate for approximately 3 days of operation. Achievement of the design basis 30-day operation is dependent upon successful implementation of plant procedures to replenish the fuel supply following design basis events.

The operability requirements for the basin level switches, Rock River level limitations, and tornado watch limitations assure that the SX makeup system is available to provide makeup water. The corresponding actions assure that the backup deep well system is available and increases the minimum cooling tower basin level to assure that adequate basin water inventory is available after a two hour delay to manually start the deep well pumps after an accident.

3/4.7.6 CONTROL ROOM VENTILATION SYSTEM

The OPERABILITY of the Control Room Ventilation System ensures that: (1) the ambient air temperature does not exceed the allowable temperature for continuous duty rating for the equipment and instrumentation cooled by this system, and (2) the control room will remain habitable for operations personnel during and following all credible accident conditions. Operation of the system with the heaters operating for at least 10 continuous hours in a 31-day period is sufficient to reduce the buildup of moisture on the adsorbers and HEPA filters. The OPERABILITY of this system in conjunction with control room

INSERT B

The limiting design basis event for the UHS makeup is a two unit trip from full power, assuming a single active failure and loss of the normal auxiliary feedwater supply source.

INSERT C

Depending on basin temperature, six or more fans are required to be available or running so that the required number of fans are available after a single active failure to assure basin

INSERT D

SX basin temperature and SX pump discharge temperature are essentially the same since the piping from the tower basins to the pumps is underground and the temperature increase across the SX pump at accident flow rates is negligible. Temperature is measured at the discharge of each SX pump.

INSERT E

The makeup systems are designed to provide adequate makeup for normal and accident conditions concurrent with the use of the essential service water system as the supply source for the auxiliary feedwater system, assuming a single active failure.

ATTACHMENT C

EVALUATION OF SIGNIFICANT HAZARDS CONSIDERATIONS FOR PROPOSED CHANGES TO APPENDIX A, TECHNICAL SPECIFICATIONS, OF FACILITY OPERATING LICENSE NPF-37

Commonwealth Edison Company (ComEd) has evaluated this proposed amendment and has determined that it involves no significant hazards considerations. According to Title 10, Code of Federal Regulations, Part 50, Section 92, Paragraph c (10 CFR 50.92 (c)), a proposed amendment to an operating license involves no significant hazards considerations if operation of the facility in accordance with the proposed amendment would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated, or
2. Create the possibility of a new or different kind of accident from any accident previously evaluated, or
3. Involve a significant reduction in margin of safety.

A. INTRODUCTION

Commonwealth Edison Company (ComEd) proposes to amend Technical Specification (TS) 3/4.7.5, "Ultimate Heat Sink" and the associated Bases for Byron Nuclear Power Station, Units 1 and 2, to support steam generator replacement and to incorporate recent Ultimate Heat Sink (UHS) design evaluations. The proposed TS changes revise the following Limiting Conditions for Operation (LCOs) for the UHS: the minimum water level in each essential service water (SX) cooling tower basin, the maximum SX pump discharge temperature, and the number of fans supporting heat removal.

B. NO SIGNIFICANT HAZARDS ANALYSIS

1. **The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.**

Technical Specification 3/4.7.5 establishes the operating requirements for the UHS. Operation of the UHS within its design basis ensures the following:

1) sufficient cooling capacity is available for continued operation of safety related equipment during normal and accident conditions and 2) adequate inventory is available to provide a 30-day cooling water supply to safety related equipment. Design analyses supporting the proposed TS changes provide full qualification of the UHS.

A loss of offsite power (LOOP) coincident with a loss of coolant accident (LOCA), designated a LOOP/LOCA, on one unit, in conjunction with the non-accident unit proceeding to an orderly shutdown and cooldown from maximum power using normal operating procedures, remains the limiting design basis event for the UHS basin temperature.

The proposed changes to the UHS LCO for basin temperature and the number of fans running do not, in themselves, factor into any initiating event for Updated Final Safety Analysis Report (UFSAR) Chapter 15 accidents and, consequently, do not increase the probability of occurrence for these previously evaluated accidents.

The UHS plays a vital role in mitigating the consequences of any accident or transient. The proposed changes will ensure that the minimum conditions necessary for the UHS to perform its design functions will always be met. Engineering calculations demonstrate that the SX pump discharge design temperature limit of 100°F, which was assumed as an initial input for the accident analyses, is preserved. Consequently, the proposed changes to the number of cooling tower fans required to be running in high speed relative to the SX pump discharge temperature do not increase the consequences of any accident previously evaluated.

The two unit plant trip from full power with the loss of normal auxiliary feedwater (AF) supply source has been shown to be more limiting than the LOOP/LOCA scenario for UHS makeup and volume considerations.

The proposed changes to the UHS LCO for minimum basin water level do not, in themselves, factor into any initiating event for the UFSAR Chapter 15 accidents and, consequently, do not increase the probability of occurrence for these previously evaluated accidents.

The proposed changes to increase the minimum basin water levels ensure there is a sufficient volume of water in the UHS basin at all times. With these proposed changes, the UHS will perform its design function for the required 30 days, and the consequences of any accident previously evaluated are not increased.

2. **The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.**

The supporting analyses for the revised TS 3/4.7.5 do not involve a new or different kind of accident from any accident previously evaluated. The proposed limits on SX basin minimum water level, maximum basin temperature, and the number of fans operating are within the design capabilities of the UHS, and ensure that the UHS will always be in a condition to perform its design function in the event of an accident or transient. New and revised analyses which support the requested TS changes ensure the full qualification of the UHS. The UHS will not be operated in a different manner such that the possibility of a new or different kind of accident would be created. Consequently, these changes do not create the possibility of a new or different kind of accident from those previously evaluated.

3. **The proposed change does not involve a significant reduction in a margin of safety.**

The proposed limits on SX basin minimum water level and maximum temperature are based on the results of new and revised design analyses which ensure that the margin of safety is not reduced. Required operator actions with appropriate times are incorporated into the analyses. The new limits on temperature and volume will ensure that, under the most limiting accident or transient scenario, cooling water from the basin will meet the accident analyses SX design temperature limit of 100 °F and will ensure that adequate inventory is available to provide a 30-day cooling water supply to safety related equipment. Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Based on the above evaluation, ComEd has concluded that the proposed changes involve no significant hazards considerations. In addition, the proposed changes will not result in a change in the type or amount of any effluents released offsite nor will the changes result in an increase in individual or cumulative occupational radiation exposure.

ATTACHMENT D

ENVIRONMENT ASSESSMENT FOR PROPOSED CHANGES TO APPENDIX A, TECHNICAL SPECIFICATIONS, OF FACILITY OPERATING LICENSES NPF-37 & NPF-66

Commonwealth Edison Company (ComEd) has evaluated this proposed license amendment request against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with Title 10, Code of Federal Regulations, Part 51, Section 21 (10 CFR 51.71). ComEd has determined that this proposed license amendment request meets the criteria for a categorical exclusion set forth in 10 CFR 51.22(c)(9). This determination is based upon the following:

1. The proposed licensing action involves the issuance of an amendment to a license for a reactor pursuant to 10 CFR 50 which changes a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or which changes an inspection or a surveillance requirement. This proposed License Amendment Request will allow ComEd to revise the minimum water level in each essential service water (SX) cooling tower basin, the maximum SX pump discharge temperature, and the number of fans supporting heat removal,
2. this proposed License Amendment Request involves no significant hazards consideration as shown in Attachment C;
3. there is no significant change in the types or significant increase in the amounts of any effluent that may be released offsite; and
4. there is no significant increase in individual or cumulative occupational radiation exposure.

Therefore, pursuant to 10 CFR 51.22(b), neither an environmental impact statement nor an environmental assessment is necessary for this proposed License Amendment Request.