May 17, 1993

Docket Nos. STN 50-454
and STN 50-455

Mr. D. L. Farrar
Manager, Nuclear Regulatory Services
Commonwealth Edison Company
Executive Towers West III, Suite 500
1400 OPUS Place
Downers Grove, Illinois 60515

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Docket Files	J.Roe
PDIII-2 p/f	J.Zwolinski
J. Hickman	J. Dyer
C. Moore	OGC
D. Hagan	A. Dummer
GHill(4)	WJones
C. Grimes	ACRS(10)
OPA	OC/LFDCB
B. Clayton RIII	NRC & Local PDRs

Dear Mr. Farrar:

SUBJECT: ISSUANCE OF AMENDMENTS (TAC NOS. M83303 AND M83304)

The U. S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 54 to Facility Operating License No. NPF-37 and Amendment No. 54 to Facility Operating License No. NPF-66 for the Byron Station, Unit Nos. 1 and 2, respectively. The amendments are in response to your application dated March 31, 1992, as supplemented on May 18, 1992.

The amendments change several technical specification requirements relative to the Byron ultimate heat sink.

A copy of the Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

Original Signed By:

John B. Hickman, Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV/V
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 54 to NPF-37
2. Amendment No. 54 to NPF-66
3. Safety Evaluation

cc w/enclosures:
See next page

190063

OFC	LA:PDIII-2	PM:PDIII-2	D:PDIII-2	OGC
NAME	CMOORE	JHICKMAN	JDYER	CMarco concur subject to comment P.2
DATE	5/11/93	5/12/93	5/12/93	5/14/93

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 17, 1993

Docket Nos. STN 50-454
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See next page

OFC	LA:PDIII-2	PM:PDIII-2	D:PDIII-2	OGC CMarco
NAME	CMOORE	JHICKMAN	JDYER	concur subject to comment P.2
DATE	5/11/93	5/12/93	5/12/93	5/14/93

cc:

Mr. William P. Poirier, Director
Westinghouse Electric Corporation
Energy Systems Business Unit
Post Office Box 355, Bay 236 West
Pittsburgh, Pennsylvania 15230

Joseph Gallo, Esquire
Hopkins and Sutter
888 16th Street, N.W.
Suite 700
Washington, D.C. 20006

Michael I. Miller, Esquire
Sidley and Austin
One First National Plaza
Chicago, Illinois 60690

Mr. Edward R. Crass
Nuclear Safeguards and
Licensing
Sargent & Lundy Engineers
55 East Monroe Street
Chicago, Illinois 60603

U. S. Nuclear Regulatory Commission
Byron Resident Inspectors Office
4448 North German Church Road
Byron, Illinois 61010-9750

Regional Administrator, Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road, Bldg. #4
Glen Ellyn, Illinois 60137

Chairman, Ogle County Board
Post Office Box 357
Oregon, Illinois 61061

Robert Neumann
Office of Public Counsel
State of Illinois Center
100 W. Randolph
Suite 11-300
Chicago, Illinois 60601

Ms. Lorraine Creek
Rt. 1, Box 182
Manteno, Illinois 60950

Douglass Cassel, Esquire
17 East Monroe Street, Suite 212
Chicago, Illinois 60603

Mrs. Phillip B. Johnson
1907 Stratford Lane
Rockford, Illinois 61107

Attorney General
500 South 2nd Street
Springfield, Illinois 62701

EIS Review Coordinator
EPA Region V
230 S. Dearborn Street
Chicago, Illinois 60604

Illinois Department of
Nuclear Safety
Office of Nuclear Facility Safety
1035 Outer Park Drive
Springfield, Illinois 62704

Commonwealth Edison Company
Byron Station Manager
4450 North German Church Road
Byron, Illinois 61010

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

COMMONWEALTH EDISON COMPANY

DOCKET NO. STN 50-454

BYRON STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 54
License No. NPF-37

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Commonwealth Edison Company (the licensee) dated March 31, 1992, as supplemented May 18, 1992, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-37 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A as revised through Amendment No. 54 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance, to be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

James E. Dyer

James E. Dyer, Director
Project Directorate III-2
Division of Reactor Projects - III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 17, 1993

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

COMMONWEALTH EDISON COMPANY

DOCKET NO. STN 50-455

BYRON STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 54
License No. NPF-66

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Commonwealth Edison Company (the licensee) dated March 31, 1992, as supplemented May 18, 1992, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter 1;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-66 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A (NUREG-1113), as revised through Amendment No. 54 and revised by Attachment 2 to NPF-66, and the Environmental Protection Plan contained in Appendix B, both of which were attached to License No. NPF-37, dated February 14, 1985, are hereby incorporated into this license. Attachment 2 contains a revision to Appendix A which is hereby incorporated into this license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance, to be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

James E. Dyer

James E. Dyer, Director
Project Directorate III-2
Division of Reactor Projects - III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 17, 1993

ATTACHMENT TO LICENSE AMENDMENT NOS. 54 AND 54

FACILITY OPERATING LICENSE NOS. NPF-37 AND NPF-66

DOCKET NOS. STN 50-454 AND STN 50-455

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. The page indicated by an asterisk is provided for convenience.

	Remove Pages	Insert Pages
	3/4 7-13	3/4 7-13
	3/4 7-14	3/4 7-14
	3/4 7-14a	3/4 7-14a
	3/4 7-15	3/4 7-15
*	3/4 7-16	* 3/4 7-16
	B 3/4 7-3	B 3/4 7-3
	B 3/4 7-4	B 3/4 7-4

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%,

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,

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% in either UHS cooling tower basin, restore the water level to at least 50% 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.

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 ≥ 82%. Continue to verify both basin levels are ≥ 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 ≥ 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 4.7.5.e.1 above, or verify both basin levels are ≥ 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 ≥ 82% and at least once every 2 hours thereafter, verify both basin levels are ≥ 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 ≥ 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 ≥ 82% and at least once every 2 hours thereafter, verify both basin levels are ≥ 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 ≥ 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 ≥ 82% and at least once every 2 hours thereafter, verify both basin levels ≥ 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 ≥ 82% and at least once every 2 hours thereafter, verify both basin levels ≥ 82%.

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

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%,

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.

3/4.7.6 CONTROL ROOM VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.6 Two independent Control Room Ventilation Systems shall be OPERABLE.

APPLICABILITY: All MODES.

ACTION:

MODES 1, 2, 3 and 4:

With one Control Room Ventilation System inoperable, restore the inoperable system to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

MODES 5 and 6:

a. With one Control Room Ventilation System inoperable, restore the inoperable system to OPERABLE status within 7 days or initiate and maintain operation of the remaining OPERABLE Control Room Ventilation System in the makeup mode.

b. With both Control Room Ventilation Systems inoperable, or with the OPERABLE Control Room Ventilation System, required to be in the makeup mode by ACTION a. not capable of being powered by an OPERABLE emergency power source, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

SURVEILLANCE REQUIREMENTS

4.7.6 Each Control Room Ventilation System shall be demonstrated OPERABLE:

a. At least once per 12 hours by verifying that the control room air temperature is less than or equal to 90°F;

b. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the Emergency Makeup System HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 continuous hours with the heaters operating; and flow through the recirculation charcoal adsorber for 15 minutes.

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

1) Verifying that the cleanup system satisfies the in-place penetration testing acceptance criteria of less than 0.05% and uses the test procedure guidance in Regulatory Positions C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the system flow rate is 6000 cfm ± 10% for the Emergency Makeup System;

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.

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.

ULTIMATE HEAT SINK (Continued)

The minimum UHS cooling tower basin water level of 50% indicated (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.

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.

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

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 54 TO FACILITY OPERATING LICENSE NO. NPF-37,

AND AMENDMENT NO. 54 TO FACILITY OPERATING LICENSE NO. NPF-66

COMMONWEALTH EDISON COMPANY

BYRON STATION, UNIT NOS. 1 AND 2

DOCKET NOS. STN 50-454 AND STN 50-455

1.0 INTRODUCTION

By letter dated March 31, 1992, as supplemented May 18, 1992, Commonwealth Edison Company (CECo, the licensee) requested changes to the Technical Specifications (TS) for Byron Station, Units 1 and 2. These changes resulted from a design basis reconstitution effort completed in 1992. The proposed changes to TS 3/4.7.5 would: decrease the maximum allowed Essential Service Water pump discharge temperature from 98°F to 96°F; require six operable cooling tower fans; apply operability requirements to the basin level switches; and allow mode changes with one makeup pump inoperable. Additional editorial changes and a revision to the TS Bases were also proposed. The May 18, 1992, submittal provided additional clarifying information that did not change the initial proposed no significant hazards consideration determination.

The ultimate heat sink (UHS) for Byron consists of two redundant essential service water (ESW) mechanical draft cooling towers and the makeup system to these cooling towers. Each of the two safety-related cooling towers consists of a water storage basin, four fans, four riser valves, and two bypass valves. The basins of the cooling towers are connected. Normal makeup is provided from the circulating water system. Safety-related makeup pumps automatically start on a low water level signal to pump water from the river. In the event of the probable maximum flood, there are deep well pumps available to provide makeup to the basin.

The mechanical draft cooling towers are used as the heat sink for the ESW system during normal operation, and they are required for safe shutdown. The UHS is capable of providing adequate cooling during a loss of coolant accident (LOCA) coincident with a loss of offsite power (LOOP) in one unit, and a simultaneous shutdown and cooldown of the other unit from maximum power to Mode 5 using normal shutdown operating procedures.

As part of the 1991 reconstitution of the UHS design basis, several items were identified as being indeterminate or different from those previously assumed in the Updated Final Safety Analysis Report (UFSAR) and design analyses. The design basis event used in the previous UFSAR included heat input to ESW

calculated from the worst case containment analysis of the LOCA unit, which resulted in a peak heat load to ESW of 513 MBTU/hr. This analysis assumed the maximum heat load in containment, which does not maximize the rate of heat transfer to ESW. In contrast, the reanalysis maximized the heat transport to the ESW system in order to provide the maximum load to the UHS. The peak heat load was recalculated to be 830.8 MBTU/hr. The large difference in heat loads is attributed to the different single failures analyzed for the reconstitution. The steady state heat loads from the original analysis were also corrected. Previously, the licensee had assumed a steady-state heat load of 24 MBTU/hr from the non-LOCA unit and 43 MBTU/hr from the LOCA unit based on early design documents that included some inaccurate information. The revised steady state heat loads are 72 MBTU/hr from the non-LOCA unit and 31 MBTU/hr from the LOCA unit based on the actual system configuration and revised calculations. The worst case wet bulb temperature was changed from 78°F to 82°F based on 30 years of meteorological data, which reduced the calculated heat removal capability of the cooling towers under worst case weather conditions. In addition, the ESW flows previously assumed were different from those used in the reanalysis. The initial analysis assumed 12,000 gallons per minute (gpm) per cell, but the reanalysis used predicted flows ranging from 7,000 to 16,000 gpm per cell. The combined effect of these changes increased the calculated heat loads and decreased the predicted cooling capability of the UHS.

The revised assumptions resulting from the design basis reconstitution decreased the margin to the ESW design maximum temperature for the worst case accident. Therefore, the licensee has proposed changes to the TS that will compensate for the previous non-conservative assumptions and ensure that the UHS is capable of providing adequate cooling during the design basis accident.

2.0 EVALUATION

2.1 ESW Temperature Limiting Condition for Operation (LCO)

The current TS requirements are based on the original cooling tower analyses which determined that the pump discharge water temperature should be limited to 98°F. The TS limit is below the 100°F design maximum temperature of the water inventory within the UHS basin. The temperature limit is specified to assure that the maximum reactor containment fan cooler inlet temperature assumed for the containment heat removal safety function is maintained, and the inlet temperature assumed for equipment coolers serviced by the ESW system is not exceeded. The licensee performed extensive testing of the ESW cooling towers in 1987 to characterize their performance. The tests verified that the cooling towers were capable of removing the peak accident heat load of 580 MBTU/hr at design conditions (78°F wet bulb temperature) with four of eight fans running.

However, using the revised assumptions from the design basis reconstitution, the licensee calculated the peak temperature when initial basin temperature was 98°F, as allowed by current TS. The resulting peak temperature was 100.5°F. Basin temperature remained above 100°F for less than 10 minutes.

The licensee has proposed reducing the ESW pump discharge temperature limit in Limiting Condition For Operation (LCO) 3.7.5.d from 98°F to 96°F. For all analyzed scenarios, the peak basin temperature remained below 100°F when the initial basin temperature was less than or equal to 96°F.

The staff has reviewed the change and finds that reducing the temperature limit to 96°F ensures that the basin temperature will not exceed the ESW design maximum temperature during normal operation or the design basis event. Therefore, the staff finds that this change is acceptable.

2.2 ESW Fan LCO

The current TS requires specific fans to be operable, depending on which unit is operating. The licensee has proposed a revision to TS LCO 3.7.5.b that will require six fans to be operable in the high speed mode with either one or both units in Mode 1 - 4. The revision would also remove all unit-specific fan requirements. When the ESW pump discharge temperature is between 80°F and 96°F, the fans would be required to be running in high speed.

The unit-specific fan requirements are being eliminated because the UHS functions as one common system for the station, not as two independent heat sinks. The two discharges from each unit run into separate return lines to the cooling towers, and each return line is fed from one discharge from each unit. The cooling towers are arranged so that any cell can receive water from either or both units.

The proposed fan requirements are expressed as a minimum number of fans required to support either single or dual unit operation. The reconstitution analyses indicated no need to restrict fan operability requirements to a given unit. The licensee's calculations showed that five fans are the minimum number of fans needed to dissipate the heat load during a design basis accident. Four fans are sufficient when the failure of an emergency diesel generator (EDG) eliminates approximately one-half of the containment heat removal systems (two reactor containment fan coolers and one containment spray pump unavailable). The combination of LCO 3.8.1.1 and the EDG requirement of proposed action statement 3.7.5.b assures that the minimum number of fans with engineered safety features-supplied power are available to safely shut down the plant during the postulated LOCA with concurrent shutdown of the other unit.

The staff has reviewed the proposed change and finds that it is acceptable because eliminating the unit-specific fan requirements will not affect the safety function of the UHS.

2.3 ESW Fan Action Requirements

The current TS 3.7.5 action statement b requires that if only five of the eight fans are operable then a sixth fan must be restored within 72 hours or the unit must be shut down. The licensee has proposed a revision to this

action statement, requiring that the five operable fans are capable of being powered from their respective diesel generator.

It is important that at least 5 fans are powered from their respective emergency diesel generators since the analysis for one-half containment heat input assumed 4 fans are running in high speed. The additional requirement of an EDG being operable for each fan relied upon assures that the minimum number of fans are available to safely shut down the plant assuming a design basis LOCA/LOOP on one unit and a concurrent safe shutdown of the opposite unit.

The staff has reviewed the proposed requirement for operable EDGs and finds it to be acceptable because it provides additional assurance that the minimum number of fans will function during a design basis event.

2.4 UHS Cooling Tower Basin Level Switches

The current TS have no operability requirements for the UHS cooling tower basin level switches. These level switches provide an automatic start signal to the makeup pumps on low basin level. The proposed TS 3.7.5.e would require two operable UHS cooling tower basin level switches. The action statement would require that with one inoperable level switch, the switch must be restored within 72 hours or both basin levels must be verified to be greater than 82% every two hours. This new basin level switch action statement allows credit for manual action to maintain the required basin level when a level switch is inoperable.

The proposed change is consistent with existing TS actions that replace automatic makeup capability with manual makeup capability. Based on the licensee's design calculations, the proposed actions provide adequate assurance that basin inventory is available to support ESW operation during normal operation and accident conditions. Therefore, the staff finds that the operability requirement and action statement for the basin level switches are acceptable.

2.5 ESW Makeup Pump

The current TS 3.0.4 does not allow a mode change with one ESW makeup pump inoperable. The proposed revision to TS action statement 3.7.5.c.2 would permit a mode change while one ESW makeup pump is inoperable. The corresponding action statement would require the same-train deep well pump to be operable and the basin level to be greater than 82%.

This change does not affect the capability of the UHS to perform its safety function. The deep well makeup pumps are seismically qualified and powered from an engineered safety features bus. The requirements for an operable backup deep well train and increased basin level provide assurance that adequate makeup flow will be available.

The staff has reviewed the proposed TS change and finds it to be acceptable. The allowance for a unit to enter another operational mode with one train of

ESW makeup inoperable will not affect the ESW system function when the compensatory actions (increasing the basin level and verifying the corresponding deep well train is operable) are implemented.

2.6 Editorial Changes

The licensee has proposed a number of editorial changes to TS 3/4.7.5. These changes correct and clarify the TS and do not change any requirements. Therefore, the staff finds that they are acceptable.

2.7 Summary

The design basis reconstitution of the UHS resulted in revised assumptions that decreased the margin to the ESW design maximum temperature for the worst case accident. Consequently, the licensee proposed changes to the TS to ensure that the UHS is capable of providing adequate cooling during the design basis accident. Reducing the cooling tower basin temperature limit to 96°F ensures that basin temperature will not exceed the 100°F ESW design maximum temperature during normal operation or the design basis event. Eliminating the unit-specific fan requirements does not affect the safety function of the UHS. The added requirement for operable EDGs provides further assurance that the minimum number of fans will function during a design basis event. The operability requirement and action statement for the basin level switches ensure that basin inventory is available to support ESW operation during normal operation and accident conditions. Implementation of compensatory actions provides assurance that changing operational mode with one train of ESW makeup inoperable will not affect the ESW system function. The editorial changes correct and clarify the TS and do not change any requirements.

The staff reviewed these changes and found that the licensee meets the requirements of General Design Criterion 44 with respect to cooling water by providing a system to transfer heat from structures, systems, and components important to safety to an ultimate heat sink. These changes do not reduce the capability of the ESW system to transfer heat loads to the UHS under both normal operating and accident conditions. Therefore, the staff finds that these changes are acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Illinois State official was notified of the proposed issuance of the amendments. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released

offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (57 FR 24664). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Ann Dummer, NRR

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