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

OMAHA PUBLIC POWER DISTRICT

DOCKET NO. 50-285

FORT CALHOUN STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 136
License No. DPR-40

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

   A. The application for amendment by the Omaha Public Power District (the licensee) dated June 28, 1990, as supplemented August 2 and November 15, 1990, 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 license 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 Par. 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, Facility Operating License No. DPR-40 is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B. of Facility Operating License No. DPR-40 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 136 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. The license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Theodore R. Quay

Theodore R. Quay, Director
Project Directorate IV-1
Division of Reactor Projects III, IV, and V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 12, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 136

FACILITY OPERATING LICENSE NO. DPR-40

DOCKET NO. 50-285

Revise Appendix "A" Technical Specifications as indicated below. The revised pages are identified by amendment number and contain vertical lines indicating the area of change.

REMOVE PAGES	INSERT PAGES
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iv	iv
2-2	2-2
2-2a	2-2a
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TECHNICAL SPECIFICATION - TABLES

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(c) If fewer than the above required reactor coolant pumps are operable, the required pumps shall be restored to operable status within 72 hours or the reactor shall be placed in cold shutdown within the next 12 hours.

(3) Cold Shutdown or $210°F \leq T_{cold} \leq 300°F$

(a) At least two (2) of the decay heat removal loops listed below shall be operable:

(i) Reactor coolant loop 1 and its associated steam generator and at least one associated reactor coolant pump.

(ii) Reactor coolant loop 2 and its associated steam generator and at least one associated reactor coolant pump.

(iii) One shutdown cooling pump, one shutdown cooling heat exchanger, and associated shutdown cooling piping.

(iv) One shutdown cooling pump, in addition to that in (iii) above, one shutdown cooling heat exchanger, in addition to that in (iii) above, and associated shutdown cooling piping.

(b) At least one (1) of the decay heat removal loops listed above shall be in operation.

(c) With no coolant loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and initiate corrective action to return the required coolant loop to operation in 8 hours.

(4) Refueling Shutdown Condition

(a) At least one (1) shutdown cooling loop shall be in operation.

(b) When the water level above the top of the irradiated fuel assemblies seated within the reactor vessel is less than 15 feet, both shutdown cooling heat exchangers and at least two LPSI or containment spray pumps shall be operable. Availability of the containment spray pumps for shutdown cooling service is subject to the limitations of item (c) below.

(c) For the purposes of items (a) and (b) above, the containment spray pumps can be considered as available shutdown cooling pumps only if both of the following conditions are met:

(i) Reactor Coolant System temperature less than 120°F.

(ii) The Reactor Coolant System is vented with a vent area equal to or greater than that of the pressurizer manway.

Exceptions

All decay heat removal loops may be made inoperable for up to 8 hours provided (1) no operations are permitted that would cause dilution of the reactor coolant system boron concentration, (2) no refueling operations are taking place, and (3) all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere are closed within 4 hours.

(5) At least one reactor coolant pump or one low pressure safety injection pump in the shutdown cooling mode shall be in operation whenever a change is being made in the boron concentration of the reactor coolant when fuel is in the reactor.

(6) Both steam generators shall be filled above the low steam generator water level trip set point and available to remove decay heat whenever the average temperature of the reactor coolant is above 300°F. Each steam generator shall be demonstrated operable by performance of the inservice inspection program specified in Section 3.17 prior to exceeding a reactor coolant temperature of 300°F.

(7) Maximum reactor coolant system hydrostatic test pressure shall be 3125 psia. A maximum of 10 cycles of 3125 psia hydrostatic tests are allowed.

(8) Reactor coolant system leak and hydrostatic test shall be conducted within the limitations of Figures 2-1A and 2-1B.

(9) Maximum secondary hydrostatic test pressure shall not exceed 1250 psia. A minimum measured temperature of 73°F is required. Only 10 cycles are permitted.

(10) Maximum steam generator steam side leak test pressure shall not exceed 1000 psia. A minimum measured temperature of 73°F is required.

(11) A non-operating reactor coolant pump shall not be started unless at least one of the following conditions is met:

The requirement to have two shutdown cooling pumps operable when there is less than 15 feet of water above the core ensures that a single failure of the operating shutdown cooling loop will not result in a complete loss of decay heat removal capability. With the reactor vessel head removed and 15 feet of water above the core, a large heat sink is available for core cooling; thus, in the event of a failure of the operating shutdown cooling loop, adequate time is provided to initiate emergency procedures to cool the core.

The restrictions on availability of the containment spray pumps for shutdown cooling service ensure that the SI/CS pumps' suction header piping is not subjected to an unanalyzed condition in this mode. Analysis has determined that the minimum required RCS vent area is 47 square inches. The pressurizer manway is specified as the minimum vent area to allow venting through the limiting cross-sectional area of the pressurizer surge line.

When reactor coolant boron concentration is being changed, the process must be uniform throughout the reactor coolant system volume to prevent stratification of reactor coolant at lower boron concentration which could result in a reactivity insertion. Sufficient mixing of the reactor coolant is assured if one low pressure safety injection pump or one reactor coolant is assured if one low pressure safety injection pump or one reactor coolant pump is in operation. The low pressure safety injection pump will circulate the reactor coolant system volume in less than 35 minutes when operated at rated capacity. The pressurizer volume is relatively inactive; therefore, it will tend to have a boron concentration higher than the rest of the reactor coolant system during a dilution operation. Administrative procedures will provide for use of pressurizer sprays to maintain a nominal spread between the boron concentration in the pressurizer and the reactor coolant system during the addition of boron.(1)

Both steam generators are required to be filled above the low steam generator water level trip set point whenever the temperature of the reactor coolant is greater than the design temperature of the shutdown cooling system to assure a redundant heat removal system for the reactor.

The design cyclic transients for the reactor system are given in USAR Section 4.2.2. In addition, the steam generators are designed for additional conditions listed in USAR Section 4.3.4. Flooded and pressurized conditions on the steam side assure minimum tube sheet temperature differential during leak testing. The minimum temperature for pressurizing the steam generator steam side is 70°F; in measuring this temperature, the instrument accuracy must be added to the 70°F limit to determine the actual measured limit. The measured temperature limit will be 73°F based upon use of an instrument with a maximum inaccuracy of ± 2°F and an additional 1°F safety margin.

Formation of a 60% steam space ensures that the resulting pressure increase would not result in any overpressurization should a reactor coolant pump be started when the steam generator secondary side temperature is greater than that of the RCS cold leg.

For the case in which no pressurizer steam space exists, limitation of the steam generator secondary side/RCS cold leg ΔT to 50°F ensures that a single low setpoint PORV would prevent an overpressurization due to actuation of a reactor coolant pump.

The exception to Specification 2.1.1(4) requiring all containment penetrations providing direct access from the containment to the outside atmosphere be closed within 4 hours requires that the equipment hatch be closed and held in place by a minimum of four bolts.

References

(1) USAR Section 4.3.7

TABLE 2-9

REACTOR COOLANT SYSTEM PRESSURE ISOLATION

System	Valve No.	Maximum (a)(b) Allowable Leakage
High-Pressure Safety Injection		
Loop 1A, Cold Leg	SI-216	≤ 5 gpm
	SI-201	≤ 5 gpm
Loop 1B, Cold Leg	SI-220	≤ 5 gpm
	SI-204	≤ 5 gpm
Loop 2A, Cold Leg	SI-208	≤ 5 gpm
	SI-195	≤ 5 gpm
Loop 2B, Cold Leg	SI-212	≤ 5 gpm
	SI-198	≤ 5 gpm
Low-Pressure Safety Injection		
Loop 1A, Cold Leg	SI-200	≤ 5 gpm
Loop 1B, Cold Leg	SI-203	≤ 5 gpm
Loop 2A, Cold Leg	SI-194	≤ 5 gpm
Loop 2B, Cold Leg	SI-197	≤ 5 gpm

Footnotes:

(a) 1. Leakage rates less than or equal to 1.0 gpm are considered acceptable.

2. Leakage rates greater than 1.0 gpm but less than or equal to 5.0 gpm are considered acceptable if the latest measured rate has not exceeded the rate determined by the previous test by an amount that reduces the margin between measured leakage rate and the maximum permissible rate of 5.0 gpm by 50% or greater.

3. Leakage rates greater than 1.0 gpm but less than or equal to 5.0 gpm are considered unacceptable if the latest measured rate exceeded the rate determined by the previous test by an amount that reduces the margin between measured leakage rate and the maximum permissible rate of 5.0 gpm by 50% or greater.

4. Leakage rates greater than 5.0 gpm are considered unacceptable.

(b) Minimum test differential pressure shall not be less than 150 psid.

3.0 SURVEILLANCE REQUIREMENTS

3.16 Residual Heat Removal System Integrity Testing

Applicability

Applies to determination of the integrity of the residual heat removal systems and associated components.

Objective

To verify that the leakage from the residual heat removal system components is within acceptable limits.

Specifications

(1) a. The portion of the shutdown cooling system that is outside the containment, and the piping between the containment spray pump suction and discharge isolation valves, shall be examined for leakage at a pressure no less than 250 psig. This shall be performed on a refueling interval.

b. Piping from valves HCV-383-3 and HCV-383-4 to the suction isolation valves of the low pressure safety injection pumps and containment spray pumps and to the high pressure safety injection pumps shall be examined for leakage at a pressure no less than 82 psig. This shall be performed at the testing frequency specified in (1)a. above.

c. The portion of the high pressure safety injection (HPSI) system that is located outside the containment and downstream of the HPSI pumps shall be examined for leakage when subjected to the discharge pressure of a HPSI pump operating in the minimum recirculation mode. This test shall be performed at the frequency specified in (1)a. above. The leakage contribution from this section shall be the observed leakage from this piping at the test pressure multiplied by the square root of the ratio 1500/P, where P is the test discharge pressure (in psig) of the operating HPSI pump.

d. Visual inspection of the system's components shall be performed at the frequency specified in (1)a. above to uncover any significant external leakage to atmosphere (including leakage from valves stems, flanges, and pump seals). The leakage shall be measured by collection and weighing or by any other equivalent method.

(2) a. The sum of leakages from section (1)a, (1)b, and (1)c above shall not exceed 1243 cc/hour.

b. Repairs shall be made as required to maintain leakage within the acceptable limits.

3.16 Residual Heat Removal System Integrity Testing (Continued)

Basis

The limiting external leakage to atmosphere rate from the RHR system (1243 cc/hour) is based upon a plant specific leak rate analysis for RHR system components operating after a design basis accident.

The test pressures for sections 3.16(1)a and 3.16(1)b, and the correction factor in section 3.16(1)c give adequate margins over the highest pressures within the lines after a design basis accident.(1)

A RHR system leakage of 1243 cc/hr will limit off-site exposures due to leakage to insignificant levels relative to those calculated for direct leakage from the containment in the design basis accident. The safety injection system pump rooms are equipped with individual charcoal filters which are placed into operation by means of switches in the control room. The radiation detectors in the auxiliary building exhaust duct are used to detect high radiation level. The 1243 cc/hr leak rate is sufficiently high to allow for reasonable leakage through the pump seals and valve packings, and yet small enough to be readily handled by the pumps and radioactive waste system. Leakage to the safety injection system pump room sumps will be returned to the spent regenerant tanks.(2) Additional makeup water to the containment sump inventory can be readily accommodated via the charging pumps from either the SIRW tank or the concentrated boric acid storage tanks.

References

(1) USAR, Section 9.3
(2) USAR, Section 6.2