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

OMAHA PUBLIC POWER DISTRICT

DOCKET NO. 50-285

FORT CALHOUN STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 172
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 27, 1995, 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 Part 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. 172, 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

L. Raynard Wharton, Project Manager
Project Directorate IV-2
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: December 12, 1995

ATTACHMENT TO LICENSE AMENDMENT NO. 172

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
viii	viii
2-17	2-17
2-18	2-18
2-19	2-19
-	2-19a
-	2-19b
-	2-19c
-	2-19d
-	2-19e
-	2-19f
-	2-19g
-	2-19h
3-11	3-11
3-12	3-12
3-12a	3-12a
3-19	3-19

TECHNICAL SPECIFICATIONS - FIGURES

TABLE OF CONTENTS

2.0 LIMITING CONDITIONS FOR OPERATION

2.2 Chemical and Volume Control System

2.2.1 Boric Acid Flow Paths - Shutdown

Applicability

Applies to the operational status of the boric acid flow paths in MODES 4 and 5 when fuel is in the reactor.

Objective

To assure operability of equipment required to add negative reactivity.

Specification

As a minimum, one of the following boric acid flow paths from an OPERABLE borated water source shall be OPERABLE:

a. A flow path from boric acid storage tank CH-11A via either a boric acid transfer pump or a gravity feed connection and a charging pump to the Reactor Coolant System.

b. A flow path from boric acid storage tank CH-11B via either a boric acid transfer pump or a gravity feed connection and a charging pump to the Reactor Coolant System.

c. A flow path from both boric acid storage tanks (CH-11A and CH-11B) via either a boric acid transfer pump or gravity feed connection and a charging pump to the Reactor Coolant System.

d. A flow path from the SIRW tank via either a charging pump or a high pressure safety injection pump to the Reactor Coolant System.

Required Actions

(1) With none of the above boric acid flow paths OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

2.0 **LIMITING CONDITIONS FOR OPERATION**
2.2 Chemical and Volume Control System (Continued)
2.2.2 Boric Acid Flow Paths - Operating

Applicability

Applies to the operational status of the boric acid flow paths whenever the reactor coolant temperature (T_{cold}) is greater than or equal to 210°F.

Objective

To assure operability of equipment required to add negative reactivity.

Specification

At least two of the following boric acid flow paths from OPERABLE borated water sources shall be OPERABLE:

a. A flow path from boric acid storage tank CH-11A, via either a boric acid transfer pump or a gravity feed connection and a charging pump to the Reactor Coolant System.

b. A flow path from boric acid storage tank CH-11B, via either a boric acid transfer pump or a gravity feed connection and a charging pump to the Reactor Coolant System.

c. A flow path from both boric acid storage tanks (CH-11A and CH-11B) via either a boric acid transfer pump or gravity feed connection and a charging pump to the Reactor Coolant System.

d. A flow path from the SIRW tank via a charging pump to the Reactor Coolant System.

Required Actions

(1) With only one of the above required boric acid flow paths to the Reactor Coolant System OPERABLE, restore to at least two OPERABLE boric acid flow paths to the Reactor Coolant System within 72 hours.

(2) With the required actions of (1) not met, or with none of the required boric acid flow paths to the Reactor Coolant System OPERABLE, be in at least HOT SHUTDOWN within 6 hours, in at leas. subcritical and $<300°F$ within the next 6 hours, and in at least COLD SHUTDOWN within the following 30 hours.

2.2.3 Charging Pumps - Shutdown

Applicability

Applies to the operational status of charging pumps in MODES 4 and 5 when fuel is in the reactor.

Objective

To assure operability of equipment required to add negative reactivity.

Specification

At least one charging pump or one high pressure safety injection pump in the boric acid flow path required to be OPERABLE pursuant to Specification 2.2.1 shall be OPERABLE.

Required Actions

(1) With no charging pump or high pressure safety injection pump OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

2.2.4 Charging Pumps - Operating

Applicability

Applies to the operational status of charging pumps whenever the reactor coolant temperature (T_{cold}) is greater than or equal to 210°F.

Objective

To assure operability of equipment required to add negative reactivity.

Specification

At least two charging pumps shall be OPERABLE.

Required Actions

(1) With only one charging pump OPERABLE, restore to at least two OPERABLE charging pumps within 72 hours.

(2) With the required actions of (1) not met, or with no charging pumps OPERABLE, be in at least HOT SHUTDOWN within 6 hours, in at least subcritical and <300°F within the next 6 hours, and in at least COLD SHUTDOWN within the following 30 hours.

2.2.5 Boric Acid Transfer Pumps - Shutdown

Applicability

Applies to the operational status of the boric acid transfer pumps in MODES 4 and 5 when fuel is in the reactor.

Objective

To assure operability of equipment required to add negative reactivity.

Specification

At least one boric acid transfer pump shall be OPERABLE if the flow path through the boric acid transfer pump in Specification 2.2.1 is OPERABLE.

Required Actions

(1) With no boric acid transfer pump OPERABLE as required to complete the flow path of Specification 2.2.1, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

2.2.6 Boric Acid Transfer Pumps - Operating

Applicability

Applies to the operational status of the boric acid transfer pumps whenever the reactor coolant temperature (T_{cold}) is greater than or equal to 210°F.

Objective

To assure operability of equipment required to add negative reactivity.

Specification

At least the boric acid transfer pump(s) in the boric acid flow path(s) required to be OPERABLE pursuant to Specification 2.2.2 shall be OPERABLE if the flow path(s) through the boric acid transfer pump(s) in Specification 2.2.2 is OPERABLE.

Required Actions

(1) With one boric acid transfer pump required to be OPERABLE to complete one of the two boric acid flow paths of Specification 2.2.2 inoperable, restore the boric acid transfer pump to OPERABLE status within 72 hours.

(2) With the required actions of (1) not met, or with two boric acid transfer pumps required to be OPERABLE to complete both of the boric acid flow paths of Specification 2.2.2 inoperable, be in at least HOT SHUTDOWN within 6 hours, in at least subcritical and <300°F within the next 6 hours, and in at least COLD SHUTDOWN within the following 30 hours.

2.0 **LIMITING CONDITIONS FOR OPERATION**
2.2 Chemical and Volume Control System (Continued)
2.2.7 Borated Water Source - Shutdown

Applicability

Applies to the operational status of borated water sources in MODES 4 and 5 when fuel is in the reactor.

Objective

To assure operability of equipment required to add negative reactivity.

Specification

As a minimum, one of the following borated water sources shall be OPERABLE:

a. Boric acid storage tank CH-11A with the contents of the tank in accordance with Figure 2-11 for a SIRW tank boron concentration at REFUELING BORON CONCENTRATION, and with the ambient temperature of the boric acid solution greater than or equal to the solubility temperature of Figure 2-12.

b. Boric acid storage tank CH-11B with the contents of the tank in accordance with Figure 2-11 for a SIRW tank boron concentration at REFUELING BORON CONCENTRATION, and with the ambient temperature of the boric acid solution greater than or equal to the solubility temperature of Figure 2-12.

c. Both boric acid storage tanks CH-11A and CH-11B with the combined contents of both tanks in accordance with Figure 2-11 for a SIRW tank boron concentration at REFUELING BORON CONCENTRATION, and with the ambient temperature of the boric acid solution greater than or equal to the solubility temperature of Figure 2-12.

d. The SIRW tank with:

    1. A minimum useable borated water volume of 10,000 gallons,

    2. A minimum boron concentration of REFUELING BORON CONCENTRATION, and

    3. A minimum solution temperature of 50°F.

Required Actions

(1) With no borated water source OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

Applicability

Applies to the operational status of borated water sources whenever the reactor coolant temperature (T_{cold}) is greater than or equal to 210°F.

Objective

To assure operability of equipment required to add negative reactivity.

Specification

Both of the following borated water sources shall be OPERABLE:

a. At least one boric acid storage tank (CH-11A or CH-11B) with the contents of the tank in accordance with Figure 2-11, or both boric acid storage tanks (CH-11A and CH-11B) with the combined contents of both tanks in accordance with Figure 2-11, and with the ambient temperature of the boric acid solution greater than or equal to the solubility temperature of Figure 2-12.

b. The SIRW tank with:

   1. A minimum useable borated water volume of 25,000 gallons,

   2. A minimum boron concentration of REFUELING BORON CONCENTRATION, and

   3. A minimum solution temperature of 50°F.

Required Actions

(1) With the above required boric acid storage tank(s) inoperable, restore the tank(s) to OPERABLE status within 72 hours.

(2) With the SIRW tank inoperable, be in at least HOT SHUTDOWN within 6 hours, in at least subcritical and <300°F within the next 6 hours, and in at least COLD SHUTDOWN within the following 30 hours.

(3) With the required actions of (1) not met, or with no OPERABLE borated water source, be in at least HOT SHUTDOWN within 6 hours, in at least subcritical and <300°F within the next 6 hours, and in at least COLD SHUTDOWN within the following 30 hours.

Basis

The chemical and volume control system provides control of the reactor coolant system boron inventory.[1] This is normally accomplished by using any one of the three charging pumps in series with one of the two boric acid pumps. An alternate method of boration is to use the charging pumps directly from the SIRW tank. A third method is to depressurize and use the safety injection pumps.

Borated water sources

There are three sources of borated water available, boric acid storage tank CH-11A, boric acid storage tank CH-11B, and the SIRW tank. An additional source that is allowed is to have the required volume combined between CH-11A and CH-11B. Each boric acid source has sufficient boron to bring the plant to a cold shutdown condition.

Whenever the reactor coolant temperature (T_{cold}) is greater than or equal to 210°F, two borated water sources must be operable in order to ensure sufficient capacity in conjunction with an assumed single failure. For a borated water source to be considered operable, tank volume, boron concentration, and temperature of the contained boric acid solution must be within their respective requirements.

In Modes 4 and 5 when fuel is in the reactor, only one of these sources must be operable. One source is acceptable during these modes without consideration of a single failure on the basis of the stable reactivity condition of the reactor and the additional restrictions prohibiting core alterations and positive reactivity changes in the event the single source becomes inoperable. If no sources are operable, restore at least one source to operable status.

Boric acid flow paths

Consistent with the requirement to maintain two borated water sources operable when the RCS temperature is greater than or equal to 210°F, a minimum of two boric acid flow paths from operable borated water sources must also be operable. For a flow path to be considered operable, boric acid must be capable of being transported from the operable borated water source to the reactor coolant system. Consistent with the requirements for borated water sources, 72 hours is allowed to restore the system to two operable flow paths.

Basis (Continued)

The flow paths available depend on which sources of borated water are operable. A flow path from a boric acid storage tank may be through the gravity feed connection or a boric acid transfer pump. When one of the operable sources is the combined contents of both boric acid storage tanks, then the flow path from this source requires that a flow path from each tank to the RCS be operable. This flow path can be established by using various combinations of gravity feed connections and/or boric acid transfer pumps. Both tanks could also be aligned to a single boric acid transfer pump since the specification requires, when using this flow path, that a flow path from the SIRW tank be operable. Therefore, single failure criteria is met by maintaining the additional flow path from the SIRW tank.

In Modes 4 and 5 when fuel is in the reactor, only one flow path must be operable. One flow path is acceptable during these modes without consideration of a single failure on the basis of the stable reactivity condition of the reactor and the additional restrictions prohibiting core alterations and positive reactivity changes in the event the single flow path becomes inoperable. If no flow path is operable, restore at least one flow path to operable status.

Boric Acid Transfer Pumps

Boric acid transfer pumps need only be operable if required to complete an operable boric acid flow path.

Whenever the reactor coolant temperature (T_{cold}) is greater than or equal to 210°F, two flow paths from operable borated water sources are required to be operable. The flow path from an operable boric acid storage tank may be through the gravity feed connection or a boric acid transfer pump. If the gravity feed connection from the operable boric acid storage tank is inoperable, then a boric acid transfer pump must be operable in order to complete an operable flow path. The specification allows 72 hours to restore one boric acid transfer pump if it is required to complete a flow path. In this situation, the one inoperable pump renders one required flow path inoperable. The specification requires a plant shutdown if two boric acid transfer pumps are inoperable that are required to complete two flow paths. In this situation, the inoperable pumps render both required flow paths inoperable.

In Modes 4 and 5 when fuel is in the reactor, only one flow path must be operable. This is consistent with the number of operable borated water sources required during these modes. If the gravity feed connection from the operable boric acid storage tank is inoperable, then a boric acid transfer pump must be operable in order to complete an operable flow path.

Boric acid transfer pumps are each of sufficient capacity to feed all three charging pumps at their maximum capacity.

Basis (Continued)

Charging Pumps

Whenever the reactor coolant temperature (T_{cold}) is greater than or equal to 210°F, two charging pumps must be operable in order to ensure it is possible to inject concentrated boric acid into the reactor coolant system with an assumed single failure. With only one pump operable, 72 hours is allowed to restore the system to two operable charging pumps. This is consistent with the allowed outage time for the borated water sources and flow paths required during these modes.

In Modes 4 and 5 when fuel is in the reactor, only one charging pump or high pressure safety injection pump must be operable. This is consistent with the number of operable borated water sources and flow paths required during these modes. A pump is required in order to complete an operable flow path to the reactor coolant system. There are additional restrictions on the use of high pressure safety injection pumps contained in Technical Specification 2.3 to ensure that the reactor vessel is not overpressurized.

Figure 2-12 contains a 10°F bias to account for temperature measurement uncertainty. An administrative procedure to monitor the temperature of the BASTs and boric acid system piping in the Auxiliary Building ensures that the temperature requirements of Figure 2-12 are met. Should the system temperature be unacceptable for operation at the current boric acid concentration, steps will be taken to reduce the boric acid concentration or raise the temperature of the system such that the concentration is within the acceptable range of Figure 2-12.

The limits on component operability and the time periods for inoperability were selected on the basis of the redundancy indicated above and NUREG-0212 Revision 2. The allowed outage times for the various components are consistent such that a support system has the same allowed outage time as the supported system.

References

(1) USAR Section 9.2

TABLE 3-2 (Continued)

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TESTING OF ENGINEERED SAFETY FEATURES, INSTRUMENTATION AND CONTROLS

	Channel Description		Surveillance Function	Frequency		Surveillance Method
14.	(continued)	b.	Calibrate	R	b.	Known pressure and differential pressure applied to pressure and level sensors.
15.	Boric Acid Tank Level	a.	Check	W	a.	Verify that level is within limits.
16.	Boric Acid Tank Temperature	a.	Check	W	a.	Verify that temperature is within limits.
17.	Steam Generator Low Pressure Signal (SGLS)	a.	Check	S	a.	Compare four independent pressure indications.
		b.	Test	Q(3)	b.	Simulated signal.
		c.	Calibrate	R	c.	Known pressure applied to sensors to verify trip points, logic operation, block permissive, auto reset and valve closures.

TABLE 3-2 (Continued)

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TESTING OF ENGINEERED SAFETY FEATURES, INSTRUMENTATION AND CONTROLS

	Channel Description		Surveillance Function	Frequency		Surveillance Method
18.	SIRW Tank Temperature	a.	Check	D(6)	a.	Verify that temperature is within limits.
		b.	Test	R	b.	Measure temperature of SIRW tank with standard laboratory instruments.
19.	Recirculation Actuation Switches	a.	Test	R	a.	Manual initiation.
20.	Recirculation Actuation Logic	a.	Test	Q	a.	Part of test 3(a) using built-in testing systems to initiate STLS.
		b.	Test	R	b.	Complete automatic test initiated sensor operation.
21.	4.16 KV Emergency Bus Low Voltage (Loss of Voltage and Degraded Voltage)	a.	Check	S	a.	Verify voltage readings are above alarm initiation on degraded voltage level - supervisory lights "on".
		b.	Test	Q	b.	Undervoltage relay operation simulated one circuit at a time.
		c.	Calibrate	R	c.	Known voltage applied to sensors and circuit breaker trip actuation logic verified.

TABLE 3-2 (Continued)

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TESTING OF ENGINEERED SAFETY FEATURES, INSTRUMENTATION AND CONTROLS

	Channel Description		Surveillance Function		Frequency		Surveillance Method
22.	Auxiliary Feedwater						
	a.	Steam Generator Water Level Low (Wide Range)	a.	Check	S	a.	Compare independent level readings.
			b.	Calibrate	R	b.	Known signal applied to sensor.
	b.	Steam Generator Pressure Low	a.	Check	S	a.	Compare independent pressure readings.
			b.	Calibrate	R	b.	Known signal applied to sensor.
	c.	Steam Generator Differential Pressure High	a.	Calibrate	R	a.	Known signal applied to sensor.
	d.	Actuation Circuitry	a.	Test	Q	a.	Functional check of initiation circuits.
			b.	Test	R	b.	System functional test of AFW initiation circuits.

NOTES: (1) Not required unless pressurizer pressure is above 1700 psia.
(2) CRHS monitors are the containment atmosphere gaseous radiation monitor and the Auxiliary Building Exhaust Stack gaseous radiation monitor.
(3) Not required unless steam generator pressure is above 600 psia.
(4) QP - Quarterly during designated modes and prior to taking the reactor critical if not completed within the previous 92 days (not applicable to a fast trip recovery).
(5) Not required to be done on a SIT with inoperable level and/or pressure instrumentation.
(6) Not required when outside ambient air temperature is greater than 50°F and less than 105°F.

TABLE 3-4 (Continued)

MINIMUM FREQUENCIES FOR SAMPLING TESTS

		Type of Measurement and Analysis	Sample and Analysis Frequencies
1.	Reactor Coolant (Continued)		
	(c) Cold Shutdown (Operating Mode 4)	(1) Chloride	1 per 3 days
	(d) Refueling Shutdown (Operating Mode 5)	(1) Chloride (2) Boron Concentration	1 per 3 days(3) 1 per 3 days(3)
	(e) Refueling Operation	(1) Chloride (2) Boron Concentration	1 per 3 days(3) 1 per shift(3)
2.	SIRW Tank	Boron Concentration	1 per 31 days
3.	Concentrated Boric Acid Tanks	Boron Concentration	1 per 7 days
4.	SI Tanks	Boron Concentration	1 per 31 days
5.	Spent Fuel Pool	Boron Concentration	1 per 31 days
6.	Steam Generator Blowdown (Operating Modes 1 and 2)	Isotopic Analysis for Dose Equivalent I-131	1 per 7 days(4)

(1) Until the radioactivity of the reactor coolant is restored to $\leq$ 1 μCi/gm DOSE EQUIVALENT I-131.

(2) Sample to be taken after a minimum of 2 EFPD and 20 days of power operation have elapsed since reactor was subcritical for 48 hours or longer.

(3) Boron and chloride sampling/analyses are not required when the core has been off-loaded. Reinitiate boron and chloride sampling/analyses one shift prior to reloading fuel into the cavity to assure adequate shutdown margin and allowable chloride levels are met.

(4) When Steam Generator Dose Equivalent I-131 exceeds 50 percent of the limits in Specification 2.20, the sampling and analysis frequency shall be increased to a minimum of 5 times per week. When Steam Generator Dose Equivalent I-131 exceeds 75 percent of this limit, the sampling and analysis frequency shall be increased to a minimum of once per day.