DEC 30 1975

DISTRIBUTION

Docket	DLZiemann
NRC PDR	KRGoller
Local PDR	BScott
ORB #2 Reading	BScharf (15)
OELD	TJCarter
OI&E (3)	PCollins
NDube	SVarga
BJones (4)	MDuncan
JMcGough	RBevan
JSaltzman, OAI	CHebron
RMDiggs	AESteen
RDSilver	DEisenhut
MHFletcher	ACRS (16)

Docket No. 50-298

Nebraska Public Power District
ATTN: Mr. J. M. Pilant, Director
Licensing and Quality Assurance
Post Office Box 499
Columbus, Nebraska 68601

Gentlemen:

The Commission has issued the enclosed Amendment No. 11 to Facility License No. DPR-46 for the Cooper Nuclear Station. This amendment includes Change No. 14 to the Technical Specifications and is in response to the remaining portion of your request dated August 28, 1975.

This amendment authorizes you to perform control rod drive maintenance activities while the suppression pool is drained and the facility is shutdown with irradiated fuel in the reactor vessel.

Copies of the related Safety Evaluation and the Federal Register Notice are also enclosed.

The other change requested in your August 28, 1975 letter concerning torus temperatures was approved as part of Amendment No. 12 to License No. DPR-46 issued by us on October 6, 1975.

Sincerely,

Original signed by
Richard D. Silver for
Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Reactor Licensing

Enclosures:
1. Amendment No. 19 to License No. DPR-46
2. Safety Evaluation
3. Federal Register Notice

OFFICE	RL:ORB #2	RL:ORB #2	RL:ORB #2	OELD	RL:ORB #2	
SURNAME	RMDiggs	RDSilver	MHFletcher:ro	SATrebey	DLZiemann	
DATE	12/1/75	12/22/75	12/28/75	12/24/75	12/30/75	

Form AEC-318 (Rev. 9-53) AECM 0240

☆ U. S. GOVERNMENT PRINTING OFFICE: 1974-526-166

cc w/enclosures:
Gene Watson, Attorney
Barlow, Watson & Johnson
P. O. Box 81686
Lincoln, Nebraska 68501

Mr. Arthur C. Gehr, Attorney
Snell & Wilmer
400 Security Building
Phoenix, Arizona 85004

Auburn Public Library
1118 - 15th Street
Auburn, Nebraska 68305

Mr. William Siebert, Commissioner
Nemaha County Board of Commissioners
Nebraska County Courtroom
Auburn, Nebraska 68305

Mr. D. Drain, Director
Department of Environmental Control
Executive Building, Second Floor
Lincoln, Nebraska 68509

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

NEBRASKA PUBLIC POWER DISTRICT

DOCKET NO. 50-298

COOPER NUCLEAR STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 11
License No. DPR-46

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

   A. The application for amendment by Nebraska Public Power District (the licensee) dated August 28, 1975, 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; and

   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.

2. Accordingly, the license is amended by a change to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 2.C(2) of Facility License No. DPR-46 is hereby amended to read as follows:

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

"(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications, as revised by issued changes thereto through Change No. 21."

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Reactor Licensing

Attachment:
Change No. 21 to the
Technical Specifications

Date of Issuance: DEC 30 1975

ATTACHMENT TO LICENSE AMENDMENT NO. 11

CHANGE NO. 14 TO THE TECHNICAL SPECIFICATIONS

FACILITY OPERATING LICENSE NO. DPR-46

DOCKET NO. 50-298

The Technical Specifications contained in Appendix A of Facility License No. DPR-46 are hereby changed by replacing pages 121, 122, 128, and 159 with the attached revised pages bearing the same numbers. Changed areas on the revised pages are reflected by marginal lines.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENT
3.5.F (cont'd.)	4.5.F (cont'd.)

3. Any combination of inoperable components in the core and containment cooling systems shall not defeat the capability of the remaining operable components to fulfill the cooling functions.

4. When irradiated fuel is in the reactor vessel and the reactor is in the Cold Shutdown Condition, both core spray systems, the LPCI and containment cooling subsystems may be inoperable, provided no work is being done which has the potential for draining the reactor vessel.

5. With irradiated fuel in the reactor vessel, one control rod drive housing may be open while the suppression chamber is completely drained provided that:

   a. The reactor vessel head is removed.

   b. The spent fuel pool gates are open and the fuel pool water level is maintained at a level $\geq$ 33 feet.

   c. The condensate transfer system is operable and a minimum of 230,000 gallons of water is in the condensate storage tank.

   d. The automatic mode of the drywell sump pump is disabled.

   e. No maintenance is being conducted which will prevent filling the suppression chamber to a level above the core spray and LPCI suctions.

   f. With the exception of the suppression chamber water supply, both core spray systems and the LPCI system are operable.

   g. The control rod is withdrawn to the backseat.

14

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENT
3.5.F (cont'd.)	4.5.F (cont'd.)
h. A special flange, capable of sealing a leaking control rod housing, is available for immediate use.	
i. The control rod housing is blanked following the removal of the control rod drive.	
j. No work is being performed in the vessel while the housing is open.	
	G. Maintenance of Filled Discharge Pipe
	The following surveillance requirements shall be adhered to, to assure that the discharge piping of the core spray subsystems, LPCI subsystem, HPCI and RCIC are filled:
6. During a refueling outage, refueling operation may continue with one core spray system or the LPCI system inoperable for a period of thirty days.	
	1. Whenever the Core Spray, LPCI, HPCI or RCIC systems are made operable, the discharge piping shall be vented from the high point of the system and water flow observed initially and on a monthly basis.
G. Maintenance of Filled Discharge Pipe	
Whenever core spray subsystems, LPCI subsystem, HPCI, or RCIC are required to be operable, the discharge piping from the pump discharge of these systems to the last block valve shall be filled.	2. The pressure switches which monitor the LPCI, core spray, HPCI and RCIC lines to ensure they are full shall be functionally tested and calibrated every three months.

14

ment is available at all times. It is during refueling outages that major maintenance is performed and during such time that all low pressure core cooling systems may be out of service. Specification 3.5.F.4 provides that should this occur, no work will be performed on the primary system which could lead to draining the vessel. This work would include work on certain control rod drive components and recirculation system. Thus, the specification precludes the events which could require core cooling. Specification 3.5.F.5 recognizes that, concurrent with control rod drive maintenance during the refueling outage, it may be necessary to drain the suppression chamber for maintenance or for the inspection required by Specification 4.7.A.2.h. In this case, if excessive control rod housing leakage occurred, three levels of protection against loss of core cooling would exist. First, a special flange would be used to stop the leak. Second, sufficient inventory of water is maintained to provide, under worst case leak conditions, approximately 60 minutes of core cooling while attempts to secure the leak are made. This inventory includes water in the reactor well, spent fuel pool, and condensate storage tank. If a leak should occur, manually operated valves in the condensate transfer system can be opened to supply either the core spray system or the spent fuel pool. Third, sufficient inventory of water is maintained to permit the water which has drained from the vessel to fill the torus to a level above the core spray and LPCI suction strainers. These systems could then recycle the water to the vessel. Since the system cannot be pressurized during refueling, the potential need for core flooding only exists and the specified combination of the core spray or the LPCI system can provide this. This specification also provides for the highly unlikely case that both diesel generators are found to inoperable. The reduction of rated power to 25% will provide a very stable operating condition. The allowable repair time of 24 hours will provide an opportunity to repair the diesel and thereby prevent the necessity of taking the plant down through the less stable shutdown condition. If the necessary repairs cannot be made in the allowed 24 hours, the plant will be shutdown in an orderly fashion. This will be accomplished while the two off-site sources of power required by Specification 3.9.A.1 are available.

G. Maintenance of Filled Discharge Pipe

If the discharge piping of the core spray, LPCI subsystem, HPCI, and RCIC are not filled, a water hammer can develop in this piping when the pump and/or pumps are started. If a water hammer were to occur at the time at which the system were required, the system would still perform its design functions. However, to minimize damage to the discharge piping and to ensure added margin in the operation of these systems, this Technical Specification requires the discharge lines to be filled whenever the system is in an operable condition.

H. Engineered Safeguards Compartments Cooling

The unit cooler in each pump compartment is capable of providing adequate ventilation flow and cooling. Engineering analyses indicate that the temperature rise in safeguards compartments without adequate ventilation flow or cooling is such that continued operation of the safeguards equipment or associated auxiliary equipment cannot be assured.

3.7 Containment Systems

Applicability:

Applies to the operating status of the primary and secondary containment systems.

Objective:

To assure the integrity of the primary and secondary containment systems.

Specification:

A. Primary Containment

1. At any time that the nuclear system is pressurized above atmospheric pressure or work is being done which has the potential to drain the vessel, the suppression pool water volume and temperature shall be maintained within the following limits except as specified in 3.7.A.2. and 3.5.F.5.

14

a. Minimum water volume - 87,650 ft^3

b. Maximum water volume - 91,000 ft^3

c. Maximum suppression pool temperature during normal power operation - 90°F.

d. During testing which adds heat to the suppression pool, the water temperature shall not exceed 10°F above the normal power operation limit specified in c. above. In connection with such testing, the pool temperature must be reduced to below the normal power operation limit specified in c. above within 24 hours.

e. The reactor shall be scrammed from any operating condition if the pool temperature reaches 110°F. Power operation shall not be resumed until the pool temperature is reduced below the normal power operation limit specified in c. above.

4.7 Containment Systems

Applicability:

Applies to the primary and secondary containment integrity.

Objective:

To verify the integrity of the primary and secondary containment.

Specification:

A. Primary Containment

1.a. The suppression pool water level and temperature shall be checked once per day.

b. Whenever there is indication of relief valve operation or testing which adds heat to the suppression pool, the pool temperature shall be continually monitored and also observed and logged every 5 minutes until the heat addition is terminated.

c. Whenever there is indication of relief valve operation with the temperature of the suppression pool reaching 160°F or more and the primary coolant system pressure greater than 200 psig, an external visual examination of the suppression chamber shall be conducted before resuming power operation.

d. A visual inspection of the suppression chamber interior, including water line regions, shall be made at each major refueling outage.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 12 TO DPR-46

CHANGE NO. 14 TO TECHNICAL SPECIFICATIONS

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

DOCKET NO. 50-298

INTRODUCTION

By letter dated August 28, 1975, Nebraska Public Power District (NPPD) requested an amendment to Facility Operating License No. DPR-46 for the Cooper Nuclear Station (CNS). The request consists of changes to the Technical Specifications with regard to authorization to perform control rod drive maintenance while the suppression pool is drained and the reactor is shutdown with irradiated fuel in the vessel. During our review, we determined that changes to the NPPD submittal were necessary. These changes were discussed with the NPPD staff. The August 28 submittal requested additional changes to the Technical Specifications which were authorized by Amendment No. 12 incorporating Change No. 15 to the Technical Specifications (issued October 6, 1975).

DISCUSSION

Technical Specification 3.5.F.4 states that "when irradiated fuel is in the reactor vessel and the reactor is in a Cold Shutdown Condition, both core spray systems, the LPCI and containment cooling subsystems may be inoperable, provided no work is being done which has the potential for draining the reactor vessel." The specification proposed by NPPD would modify this requirement by allowing control rod drive maintenance with the suppression pool drained. Control rod drive maintenance involves work which has the potential for draining of water from the vessel. Draining of the suppression pool involves a degradation of the available emergency core cooling systems but does not render emergency core cooling inoperable. Requirements would be added to the specifications to assure that draining of a significant amount of water from the vessel during rod drive maintenance would be highly unlikely, and to assure that even if a significant amount of water were lost, available makeup and cooling systems would be available.

The CNS plant is a boiling water reactor (BWR) housed in a Mark I primary containment. The Mark I containment is a pressure suppression type of containment that consists of a drywell and suppression chamber (or torus). The torus contains a volume of water which serves as a reservoir for the core standby cooling systems. When the reactor is in the cold shutdown condition with the reactor vessel head removed, the reactor core must be covered with water in order that radioactive fission product decay heat may be removed. Should a leak develop which could drain the reactor vessel, the suppression chamber water is a primary source of makeup water to the vessel. In the cold shutdown condition, CNS has the capability to supply torus water to the vessel via either of the two core spray systems or the Low Pressure Coolant Injection (LPCI) subsystem of the Residual Heat Removal (RHR) system.

When the reactor vessel head is removed, another source of reactor coolant makeup water becomes available. This is spent fuel pool water which can flow from the fuel pool to the reactor vessel if the fuel pool gates are open and sufficient pool level is maintained.

The condensate storage tank provides yet another source for primary makeup water. Storage tank water may be supplied to the fuel pool via the condensate transfer system or to the core spray systems via an alternate supply line to the core spray pumps.

The design of the CNS control rod drive (CRD) system permits CRD maintenance to be performed without excessive coolant leakage from the reactor vessel. When the control rod is withdrawn to the backseat position, a seal is formed between the control rod and the vessel. This seal allows disassembly of the CRD mechanism without leakage of coolant from the vessel to the CRD housing. If the seal is not properly made, excessive leakage will be detected at the CRD housing flange prior to removal of the mechanism from the housing.

The modified technical specifications would require that when irradiated fuel is in the reactor vessel, one control rod housing may be open while the suppression chamber is completely drained provided that:

1. The reactor vessel head is removed.

2. The spent fuel pool gates are open and the fuel pool water level is maintained at a level $\geq$ 33 feet.

3. The condensate transfer system is operable and a minimum of 230,000 gallons of water is in the condensate storage tank.

4. The automatic mode of the drywell sump pumps is disabled.

5. No maintenance is being conducted which will prevent filling the suppression chamber to a level above the core spray and LPCI suctions.

6. With the exception of the suppression chamber water supply, both core spray systems and the LPCI system are operable.

7. The control rod is withdrawn to the backseat.

8. A special flange, capable of sealing a leaking control rod housing, is available for immediate use.

9. A blank flange has been installed on the control rod housing following removal of the control rod drive.

10. No work is being performed in the vessel while the housing is open.

In the event a leak should develop while a CRD mechanism is removed, prior to installation of a blank flange, the modified technical specifications would provide the following:

1. A special flange, capable of securing the leakage from a CRD housing, would be swung into position to stop the leak. Flanges of this design have been developed by other BWR plants in conjunction with similar previously approved technical specifications.

2. If immediate use of the special flange were precluded, the water volume above the reactor vessel, in the reactor well, spent fuel pool, and condensate storage tank would be available to adequately cool the core. This volume of water would provide approximately 60 minutes for CNS personnel to secure the leak.

3. The volume of water from the fuel pool, reactor well, and condensate storage tank, if allowed to flow unimpeded to the drywell, would begin to fill the suppression chamber. It would fill the torus to a level above the suction lines for the core spray and LPCI systems. These systems could then recycle the water back to the reactor vessel. Recycling water in this manner could be conducted indefinitely. Disability of the automatic mode of the drywell sump pumps assures that cooling water does not bypass the torus.

EVALUATION

The staff has evaluated the NPPD proposal, as modified, and has concluded that:

1. The probability of opening an uncontrolled leakage path from the reactor vessel through a CRD housing is remote because excessive leakage through

the control rod backseat would be detected by maintenance personnel prior to complete disassembly of the housing flange.

2. In the event of leakage from a CRD housing after the housing has been opened, the special flange; described above, would be capable of securing the leak.

3. The volume of water in the fuel pool, reactor well, and condensate storage tank would provide both sufficient time to employ the above mentioned special flange and sufficient level in the torus to permit recycling water from the torus to the reactor vessel.

We conclude that, with the restrictions added to limit the chance of significant water leakage and the added requirements on availability of makeup and cooling water, the proposed specification does not involve a significant increase in the probability or consequences of accidents previously considered nor does it involve a significant decrease in a safety margin.

CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the change does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the change does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

DATED: DEC 30 1975

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-298

NEBRASKA PUBLIC POWER DISTRICT

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY LICENSE

Notice is hereby given that the U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 11 to Facility Operating License No. DPR-46, issued to the Nebraska Public Power District (the licensee), which revised Technical Specifications for operation of the Cooper Nuclear Station (the facility) located in Nemaha County, Nebraska. The amendment is effective as of its date of issuance.

The amendment authorized the licensee to perform control rod drive maintenance activities while the suppression pool is drained and the facility is shutdown with irradiated fuel in the reactor vessel.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment is not required since the amendment does not involve a significant hazards consideration.

For further details with respect to this action, see (1) the application for amendment dated August 28, 1975, (2) Amendment No. 19 to License No. DPR-46, with Change No. 14 and (3) the Commission's concurrently issued Safety Evaluation. All of these items are available for

public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C. and at the Auburn Public Library, 1118 - 15th Street, Auburn, Nebraska 68305. A copy of items (2) and (3) may be obtained upon request addressed to the United States Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Reactor Licensing.

Dated at Bethesda, Maryland, this 30th day of December, 1975.

FOR THE NUCLEAR REGULATORY COMMISSION
Original signed by
Richard D. Silver for
Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Reactor Licensing

OFFICE	RL:ORB #2	RL:ORB #2	RL:ORB #2	OELD	RL:ORB #2	
SURNAME	RMDiggs	RDSilver	MHFletcher:ro	S A Treby	DLZiemann for	
DATE	12/ 1/75	11/29/75	11/28/75	12/24/75	12/30/75	

Form AEC-318 (Rev. 9-53) AECM 0240

☆ U. S. GOVERNMENT PRINTING OFFICE: 1974-526-166