JAN 29 1976

Docket No. 50-298

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TBAbernathy
JRBuchanan
[redacted]

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. 19 to Facility License No. DPR-46 for the Cooper Nuclear Station. The amendment consists of changes in the Technical Specifications that alter the setpoints for certain pressure switches in the Residual Heat Removal and Core Spray systems in response to your request dated December 2,1975. Additional Technical Specification changes have been incorporated in this amendment which update the information concerning personnel breathing apparatus and correct editorial errors in the Technical Specification table of contents and Specification 1.1 and its bases.

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

Please note that we have discontinued the use of separate identifying numbers for changes to technical specifications. Sequential amendment numbers will be continued as in the past.

Sincerely,

Original signed by
Dennis L. Ziemann

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

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

cc w/enclosures:
See next page

OFFICE	RL:ORB #2	RL:ORB #2	OELD	RL:ORB #2		
SURNAME	RMDiggs	MFletcher	STRIDIRor	DLZiemann		
DATE	1/19/76	1/19/76	1/26/76	1/29/76		

Form AEC-318 (Rev. 9-53) AECM 0240 ☆ U.S. GOVERNMENT PRINTING OFFICE: 1974-526-166

cc w/enclosures:
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Auburn, Nebraska 68305

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

cc w/enclosures and cy of NPPD's
filing dtd. 12/2/75:
Mr. D. Drain, Director
Department of Environmental Control
Executive Building, Second Floor
Lincoln, Nebraska 68509

NEBRASKA PUBLIC POWER DISTRICT

DOCKET NO. 50-298

COOPER NUCLEAR STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 19
License No. DPR-46

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

   A. The application for amendment by the Nebraska Public Power District (the licensee) dated December 2, 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;

   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. An environmental statement or negative declaration need not be prepared in connection with the issuance of this amendment.

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:

OFFICE➤						
SURNAME➤						
DATE➤						

"(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."

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

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by
Dennis L. Ziemann

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

Attachment:
Changes to the Technical
Specifications

Date of Issuance: JAN 29 1976

OFFICE ➤						
SURNAME ➤						
DATE ➤						

ATTACHMENT TO LICENSE AMENDMENT NO. 19

FACILITY OPERATING LICENSE NO. DPR-46

DOCKET NO. 50-298

Replace existing pages ii, 6, 12, 53, 54, 230, and 232 with the attached revised pages bearing the same numbers. Changed areas on the revised pages are reflected by marginal lines.

OFFICE ➤						
SURNAME ➤						
DATE ➤						

TABLE OF CONTENTS (cont'd)

Amendment No. 19

1.1 FUEL CLADDING INTEGRITY

Applicability

The Safety Limits established to preserve the fuel cladding integrity apply to those variables which monitor the fuel thermal behavior.

Objective

The objective of the Safety Limits is to establish limits below which the integrity of the fuel cladding is preserved.

Specifications

A. Reactor Pressure >800 psia and Core Flow >10% of Rated

The existence of a minimum critical power ratio (MCPR) less than 1.06 shall constitute violation of the fuel cladding integrity safety.

B. Core Thermal Power Limit (Reactor Pressure $\leq$800 psia and/or Core Flow $\leq$10%)

When the reactor pressure is $\leq$800 psia or core flow is less than 10% of rated, the core thermal power shall not exceed 25% of rated thermal power.

C. Power Transient

To ensure that the Safety Limit established in Specification 1.1.A and 1.1.B is not exceeded, each required scram shall be initiated by its expected scram signal. The Safety Limit shall be assumed to be exceeded when scram is accomplished by a means other than the expected scram signal.

2.1 FUEL CLADDING INTEGRITY

Applicability

The Limiting Safety System Settings apply to trip settings of the instruments and devices which are provided to prevent the fuel cladding integrity Safety Limits from being exceeded.

Objective

The objective of the Limiting Safety System Settings is to define the level of the process variables at which automatic protective action is initiated to prevent the fuel cladding integrity Safety Limits from being exceeded.

Specifications

A. Trip Settings

The limiting safety system trip settings shall be as specified below:

1. Neutron Flux Trip Settings

a. APRM Flux Scram Trip Setting (Run Mode)

When the Mode Switch is in the RUN position, the APRM flux scram trip setting shall be:

$$S \leq 0.66\ W + 54\%$$

where:

S = Setting in percent of rated thermal power (2381 MWt)

W = Loop recirculation flow rate in percent of rated (rated loop recirculation flow rate equals 34.2 million lb/hr)

Rod Array	16, 64 Rods in an 8 x 8 array
	49 Rods in a 7 x 7 array

The required input to the statistical model are the uncertainties listed on Table 1.1-1, the nominal values of the core parameters listed in Table 1.1-2, and the relative assembly power distribution shown in Table 1.1-3. Table 1.1-4 shows the R-factor distributions that are input to the statistical model which is used to establish the safety limit MCPR. The R-factor distributions shown are taken near the beginning of the fuel cycle. The basis for the uncertainties in the core parameters is given in NEDO-20340[2] and the basis for the uncertainty in the GEXL correlation is given in NEDO-10958[1]. The power distribution is based on a typical 764 assembly core in which the rod pattern was arbitrarily chosen to produce a skewed power distribution having the greatest number of assemblies at the highest power levels. The worst distribution in Cooper Nuclear Station during any fuel cycle would not be as severe as the distribution used in the analysis.

B. Core Thermal Power Limit (Reactor Pressure <800 psia or Core Flow <10% of Rated)

The use of the GEXL correlation is not valid for the critical power calculations at pressures below 800 psia or core flows less than 10% of rated. Therefore, the fuel cladding integrity safety limit is protected by limiting the core thermal power.

At pressures below 800 psia, the core elevation pressure drop (0 power, 0 flow) is greater than 4.56 psi. At low power and all flows this pressure differential is maintained in the bypass region of the core. Since the pressure drop in the bypass region is essentially all elevation head, the core pressure drop at low power and all flows will always be greater than 4.56 psi. Analyses show that with a flow of 28×10^3 lbs/hr bundle flow, bundle pressure drop is nearly independent of bundle power and has a value of 3.5 psi. Thus, the bundle flow with a 4.56 psi driving head will be greater than 28×10^3 lbs/hr irrespective of total core flow and independent of bundle power for the range of bundle powers of concern. Full scale ATLAS test data taken at pressures from 14.7 psia to 800 psia indicate that the fuel assembly critical power at this flow is approximately 3.35 MWt. With the design peaking factors this corresponds to a core thermal power of more than 50%. Thus, a core thermal power limit of 25% for reactor pressures below 800 psi or core flow less than 10% is conservative.

C. Power Transient

Plant safety analyses have shown that the scrams caused by exceeding any safety setting will assure that the Safety Limit of Specification 1.1A or 1.1B will not be exceeded. Scram times are checked periodically to assure the insertion times are adequate. The thermal power transient resulting when a scram is accomplished other than by the expected scram signal (e.g., scram from neutron flux following closure of the main

COOPER NUCLEAR STATION
TABLE 3.2.B (PAGE 1)
CIRCUITRY REQUIREMENTS CORE SPRAY SYSTEM

Instrument	Instrument I.D. No.	Setting Limit	Minimum Number of Operable Components Per Trip System	Action Required When Component Operability Is Not Assured (1)
Reactor Low Water Level	NBI-LIS-72 A,B,C, & D	$\geq$-145.5 of Indicated Level	2	A
Reactor Low Pressure	NBI-PS-52 A & C NBI-PIS-52 B & D	$\leq$450 psig	2	A
Drywell High Pressure	PC-PS-101, A,B,C, & D	$\leq$2 psig	2	A
Core Spray Pump Disch. Press.	CS-PS-44, A & B CS-PS-37, A & B	$100 \leq P \leq 165$ psig	2	A
Core Spray Pump Time Delay	CS-TDR-K16 A & B	$9 \leq T \leq 11$ seconds	1	B
Low Voltage Relay Emerg. Bus	27X1 - 1F & 1G 27X2 - 1F & 1G	Loss of Voltage	1	B
Aux. Bus Low Voltage Relay	27X3 - 1A & 1B	Loss of Voltage	1	B
Pump Discharge Line Low Pressure	CM-PS-73, A & B	$\geq$10 psig	(3)	D

COOPER NUCLEAR STATION
TABLE 3.2.B (Page 2)
RESIDUAL HEAT REMOVAL SYSTEM (LPCI MODE) CIRCUITRY REQUIREMENTS

Instrument	Instrument I.D. No.	Setting Limit	Minimum Number of Operable Components Per Trip System (1)	Action Required When Component Operability Is Not Assured
Drywell High Pressure	PC-PS-101 A,B,C, & D	$\leq$2 psig	2	A
Reactor Low Water Level	NBI-LIS-72, A,B,C, & D #4	$\geq$-37" Indicated Level	2	A
Reactor Low Water Level	NBI-LIS-72, A,B,C, & D #1	$\geq$-145.5" Indicated Level	2	A
Reactor Vessel Shroud Level Below Low Level Trip	NBI-LITS-73, A & B #1	$\geq$-39 Indicated Level	1	B
Reactor Low Pressure	RR-PS-128, A & B	$\leq$75 psig	1	B
Reactor Low Pressure	NBI-PS-52A NBI-PIS-52B	$\leq$ 450 psig	1	A
Reactor Low Pressure	NBI-PS-49, A & B NBI-PS-50, A & B	$\geq$900 psig $\geq$900 psig	2 2	A A
Drywell Pressure Containment Spray	PC-PS-119, A,B,C, & D	$\leq$2 psig	2	A
Riser Differential Pressure	RR-dPIS-129, A,B,C, & D	$\leq$1 psid	2	A
Recirc. Pump Differential Pressure	RR-dPIS-136 A & B RR-dPIS-137 A & B RR-dPIS-138 A & B RR-dPIS-139 A & B	$\leq$2 psid $\leq$2 psid $\leq$2 psid $\leq$2 psid	2 2 2 2	A A A A
RHR Pump Discharge	RHR-PS-120, A,B,C, & D RHR-PS-105, A,B,C, & D	$100 \leq P \leq 165$ psig	2 2	A A

COOPER NUCLEAR STATION
TABLE 6.3.1
PROTECTION FACTORS FOR RESPIRATORS

DESCRIPTION	MODES 1/	PROTECTION FACTORS 2/ PARTICULATES AND VAPORS AND GASES EXCEPT TRITIUM OXIDE 3/	GUIDES TO SELECTION OF EQUIPMENT BUREAU OF MINES/NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH APPROVALS
I. AIR-PURIFYING RESPIRATORS			
Facepiece, half-mask 4/ 7/	NP	5	30 CFR Part 11 Subpart K
Facepiece, full 7/	NP	100	30 CFR Part 11 Subpart K
II. ATMOSPHERE-SUPPLYING RESPIRATOR			
1. Airline Respirator			
Facepiece, half-mask	CF	100	30 CFR Part 11 Subpart J
Facepiece, full	CF	1,000	30 CFR Part 11 Subpart J
Facepiece, full 7/	D	100	30 CFR Part 11 Subpart J
Facepiece, full	PD	1,000	30 CFR Part 11 Subpart J
Hood	CF	5/	30 CFR Part 11 Subpart J
Suit	CF	5/	6/
2. Self-contained breathing apparatus (SCBA)			
Facepiece, full 7/	D	100	30 CFR Part 11 Subpart H
Facepiece, full	PD	1,000	30 CFR Part 11 Subpart H
Facepiece, full	R	100	30 CFR Part 11 Subpart H
III. COMBINATION RESPIRATOR Any combination of air-purifying and atmosphere-supplying respirator		Protection factor for type and mode of operation as listed above	30 CFR Part 11 § 11.63(b)

1/, 2/, 3/, 4/, 5/, 6/, 7/, (these notes are on the following pages)

NOTES FOR TABLE 6.3.1 (cont'd.)

of the suit or hood and its permeability to the contaminant under conditions of use. No protection factor greater than 1,000 shall be used except as authorized by the commission.

6/ No approval schedules currently available for this equipment. Equipment must be evaluated by testing or on basis of available test information.

7/ Only for shaven faces

NOTE 1: Protection factors for respirators, as may be approved by the U. S. Bureau of Mines and/or National Institute for Occupational Safety and Health (NIOSH) according to approval schedules for respirators to protect against airborne radionuclides, may be used to the extent that they do not exceed the protection factors listed in this Table. The protection factors in this Table may not be appropriate to circumstances where chemical or other respiratory hazards exist in addition to radioactive hazards. The selection and use of respirators for such circumstances should take into account approvals of the U. S. Bureau of Mines and/or NIOSH in accordance with its applicable schedules.

NOTE 2: Radioactive contaminants for which the concentration values in Appendix B, Table I of this part are based on internal dose due to inhalation may, in addition, present external exposure hazards at higher concentrations. Under such circumstances, limitations on occupancy may have to be governed by external dose limits.

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

SAFETY EVALUATION BY OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 19 TO DPR-46

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

DOCKET NO. 50-298

INTRODUCTION

By letter dated December 2, 1975, Nebraska Public Power District (NPPD) requested an amendment to Facility Operating License No. DPR-46 for the Cooper Nuclear Station (CNS). The request would alter the setpoints of certain pressure switches in the Residual Heat Removal (RHR) and Core Spray (CS) systems in the CNS Technical Specifications.

In addition to the changes requested by NPPD, two other changes, administrative in nature, are addressed in this evaluation. These changes have been discussed with the NPPD staff. The first would update the information concerning personnel air breathing apparatus to reflect the fact that some responsibilities of the Bureau of Mines have been assumed by the National Institute for Occupational Safety and Health (NIOSH). The second would correct typographical and editorial errors in the Technical Specification table of contents and Specification 1.1 and its bases.

DISCUSSION AND EVALUATION

Pressure switches CS-PS-44A & B and CS-PS-37A & B are activated by the discharge pressure of the A & B Core Spray (CS) pumps. Pressure switches RHR-PS-105A, B, C & D and RHR-PS-120A, B, C & D are activated by the discharge pressure of the 3A, 3B, 3C & 3D Residual Heat Removal (RHR) pumps. These switches provide a signal to the initiation logic circuit of the Automatic Depressurization System (ADS). The signal permits ADS initiation only if at least one CS pump or one RHR pump is operating. The ADS is designed to quickly reduce reactor system pressure following a small loss-of-coolant accident so that the low discharge pressure-high flow rate CS and RHR systems can inject cooling water into the reactor vessel. It is therefore essential that one of the CS or RHR pumps is running as a prerequisite for ADS initiation. The present CNS Technical Specification limit for the discharge pressure switch settings is less than or equal to 165 psig. A pressure switch setting well below 165 psig could give false indication that a CS or RHR pump was running. For example, if one of the switches were set less than or equal to 45 psig, the static water pressure normally seen by the pressure switches, which is about 45 psig, would be sufficient to actuate the switches even if the CS or RHR pumps were not running.

The proposed specification would require the pressure switch setpoints to be maintained in a band of pressures between 100 and 165 psig. The lower limit of 100 psig is both high enough to prevent switch actuation by the 45 psig static head of water felt by the switches by virtue of their position in the CS or RHR systems and is also consistent with the specification limits that the NRC staff applies to new facilities. The upper limit of 165 psig is the present CNS limit and is low enough to assure that the discharge pressure of an operating CS or RHR pump will actuate its respective switch.

The NRC staff concludes that the proposed switch settings would provide additional assurance that the ADS system will function as designed.

Table 6.3.1 which specifies protection factors for personnel respirators at CNS has been updated and now includes reference to the National Institute of Occupational Safety and Health (NIOSH) in addition to the Bureau of Mines. This reflects the fact that respiratory equipment requirements are now levied by both NIOSH and Bureau of Mines.

We conclude that the update of Table 6.3.1 is administrative in nature and does not result in weakening the CNS respiratory protection program.

Specification 1.1 of the CNS Technical Specifications and its bases were changed by Amendment No. 16 dated October 31, 1975, which incorporated Change No. 19 to the Technical Specifications. Some typographical and administrative errors were included in this specification. The correction of errors in Specification 1.1.A would require changing "Reactor Pressure > 800 psia and Core Flow > 10% or rated " to "Reactor Pressure > 800 psia and Core Flow > 10% of rated." Also, the minimum critical power ratio (MCPR) would be changed from 1.05 to 1.06; 1.06 was the MCPR approved by the NRC staff in the preparation of Amendment No. 16. Errors in Specification 1.1.B would be corrected by changing the heading to read "Core Thermal Power Limit (Reactor Pressure ≤ 800 psia and/or Core Flow ≤ 10%)" from "Core Thermal Power Limit (Reactor Pressure < 800 psia and/or Core Flow < 10%)." The equal signs, which are already present in the specification basis, were omitted in the specification itself. An additional sentence would also be added to the basis for 1.1.B. The sentence discusses the method used to establish the fuel cladding integrity limits for reactor pressure ≤ 800 psia and/or core flow < 10% of rated. It does not alter the specifications under which the reactor is operated, but it is added only to describe how the specification was derived.

We conclude that the changes to Specification 1.1 and its bases represent the correction of typographical and editorial errors inadvertently included in Amendment No. 16.

A revised page ii to the CNS Technical Specifications is included with this amendment. The NRC staff concludes that the revised page would correct an editorial error which was made in the issuance of Amendment No. 18 to the CNS Facility License dated December 11, 1975.

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and pursuant to 10 CFR §51.5(d)(4) that an environmental statement, negative declaration, or environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

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 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.

DATE:

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. 19 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.

This amendment revises the Technical Specifications for the facility to alter the setpoints of certain pressure switches in the Residual Heat Removal and Core Spray systems, to update the information concerning personnel breathing apparatus, and to correct editorial errors in the Technical Specification table of contents and Specification 1.1 and its bases.

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.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental statement, negative declaration or environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment dated December 2, 1975, (2) Amendment No. 19 to License No. DPR-46, 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 Operating Reactors.

Dated at Bethesda, Maryland, this 29th day of January, 1976.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by
Dennis L. Ziemann
Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

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SURNAME ➤	RMDiggs	MFletcher:ro	STRIDIKOW	DLZiemann		
DATE ➤	1/9/76	1/9/76	1/26/76	1/29/76		

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