May 15, 1989

Docket No. 50-298

Mr. George A. Trevors, Division
Manager - Nuclear Support
Nuclear Power Group
Nebraska Public Power District
Post Office Box 499
Columbus, Nebraska 68601

Dear Mr. Trevors:

SUBJECT: COOPER NUCLEAR STATION - AMENDMENT NO. 129 TO FACILITY OPERATING LICENSE NO. DPR-46 (TAC NO. 42573)

The Commission has issued the enclosed Amendment No.129 to Facility Operating License No. DPR-46 for the Cooper Nuclear Station. The amendment consists of changes to the Technical Specifications in response to your application dated April 19, 1988 (Change Number 31) as supplemented April 19, 1989.

The amendment changes the Technical Specifications to add Limiting Conditions for Operation and Surveillance Requirements for Containment Vent and Purge Valves and the Standby Gas Treatment System.

A copy of our related Safety Evaluation is enclosed. Notice of Issuance will be included in the Commission's next Bi-weekly Federal Register notice.

Sincerely,

/s/
Paul W. O'Connor, Project Manager
Project Directorate - IV
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No.129 to
License No. DPR-46
2. Safety Evaluation

cc w/enclosures:
See next page

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DOCUMENT NAME: COOPER AMENDMENT CHANGE 31
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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See next page

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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. 129
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 April 19, 1988 as supplemented April 19, 1989, 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, as amended, 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, 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. DPR-46 is hereby amended to read as follows:

   2. Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 129 , 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

Fredrick J. Hebdon, Director
Project Directorate - IV
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 15, 1989

ATTACHMENT TO LICENSE AMENDMENT NO. 129

FACILITY OPERATING LICENSE NO. DPR-46

DOCKET NO. 50-298

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised areas are indicated by marginal lines.

Pages
160
173
174
175
179
184

LIMITING CONDITIONS FOR OPERATION

3.7.A.1 (cont'd)

f. During reactor isolation conditions, the reactor pressure vessel shall be depressurized to less than 200 psig at normal cooldown rates if the pool temperature reaches 120°F.

2. Containment Integrity

a. Primary containment integrity shall be maintained at all times when the reactor is critical or when the reactor water temperature is above 212°F and fuel is in the reactor vessel except while performing "open vessel" physics tests at power levels not to exceed 5 MW(t).

b. When Coolant Temperature is above 212°F, the drywell and suppression chamber purge and vent system may be in operation for up to 90 hours per calendar year with the supply and exhaust 24-inch isolation valves in one supply line and one exhaust line open for containment inerting, deinerting, or pressure control.

If venting or purging is through Standby Gas for such operations, then both Standby Gas Treatment Systems shall be operable and only one Standby Gas Treatment System is to be used.*

* Not applicable to valves open during venting or purging provided such venting or purging utilizes the 2-inch bypass line(s) around the applicable inboard purge exhaust isolation valve(s) with the inboard valve(s) in a closed condition.

SURVEILLANCE REQUIREMENTS

4.7.A (cont'd)

2. Leak Rate Testing

a. Integrated leak rate test (ILRT's) shall be performed to verify primary containment integrity. Primary containment integrity is confirmed if the leakage rate does not exceed the equivalent of 0.635 percent of the primary containment volume per 24 hours at 58 psig.

b. Integrated leak rate tests may be performed at either 58 psig or 29 psig, the leakage rate test period, extending to 24 hours of retained internal pressure. If it can be demonstrated to the satisfaction of those responsible for the acceptance of the containment structure that the leakage rate can be accurately determined during a shorter test period, the agreed-upon shorter period may be used.

Prior to initial operation, integrated leak rate tests must be performed at 58 and 29 psig (with the 29 psig test being performed prior to the 58 psig test) to establish the allowable leak rate, L_t (in percent of containment volume per 24 hours) at 29 psig as the lesser of the following values.

(L_a is 0.635 percent)

$$L_t = 0.635 \frac{L_{tm}}{L_{am}}$$

for $\frac{L_{tm}}{L_{am}} \leq 0.7$

where

L_{tm} = measured ILR at 29 psig

L_{am} = measured ILR at 58 psig. and

$\frac{L_{tm}}{L_{am}} \leq 1.0$

$$L_t = 0.635 \frac{P_t}{P_a}^{1/2}$$

TABLE 3.7.4

PRIMARY CONTAINMENT TESTABLE ISOLATION VALVES

PEN. NO.	VALVE NUMBERS	TEST MEDIA
X-7A	MS-AO-80A and MS-AO-86A, Main Steam Isolation Valves	Air
X-7B	MS-AO-80B and MS-AO-86B, Main Steam Isolation Valves	Air
X-7C	MS-AO-80C and MS-AO-86C, Main Steam Isolation Valves	Air
X-7D	MS-AO-80D and MS-AO-86D, Main Steam Isolation valves	Air
X-8	MS-MO-74 and MS-MO-77, Main Steam Line Drain	Air
X-9A	RF-15CV and RF-16CV, Feedwater Check Valves	Air
X-9A	RCIC-AO-22, RCIC-MO-17, and RWCU-15CV, RCIC/RWCU Connection to Feedwater	Air
X-9B	RF-13CV and RF-14CV, Feedwater Check Valves	Air
X-9B	HPCI-AO-18 and HPCI-MO-57, HPCI Connection to Feedwater	Air
X-10	RCIC-MO-15 and RCIC-MO-16, RCIC Steam Line	Air
X-11	HPCI-MO-15 and HPCI-MO-16, HPCI Steam Line	Air
X-12	RHR-MO-17 and RHR-MO-18, RHR Suction Cooling	Air
X-13A	RHR-MO-25A and RHR-MO-27A, RHR Supply to RPV	Air
X-13B	RHR-MO-25B and RHR-MO-27B, RHR Supply to RPV	Air
X-14	RWCU-MO-15 and RWCU-MO-18, Inlet to RWCU System	Air
X-16A	CS-MO-11A and CS-MO-12A, Core Spray to RPV	Air
X-16B	CS-MO-11B and CS-MO-12B, Core Spray to RPV	Air
X-18	RW-732AV and RW-733AV, Drywell Equipment Sump Discharge	Air
X-19	RW-765AV and RW-766AV, Drywell Floor Drain Sump Discharge	Air
X-25 (Note 1)	PC-232MV and PC-238AV, Purge and Vent Supply to Drywell	Air
X-25	ACAD-1305MV and ACAD-1306MV, Supply to Drywell	Air
X-26 (Note 1)	PC-231MV, PC-246AV, and PC-306 MV Purge and Vent Exhaust from Drywell	Air
X-26	ACAD-1310MV, Bleed from Drywell	Air

TABLE 3.7.4 (page 2)

PRIMARY CONTAINMENT TESTABLE ISOLATION VALVES

PEN. NO.	VALVE NUMBERS	TEST MEDIA
X-39A	RHR-MO-26A and RHR-MO-31A, Drywell Spray Header Supply	Air
X-39B	RHR-MO-26B and RHR-MO-31B, Drywell Spray Header Supply	Air
X-39B	ACAD-1311MV and ACAD-1312MV, Supply to Drywell	Air
X-41	RRV-740AV and RRV-741AV, Reactor Water Sample Line	Air
X-42	SLC-12CV and SLC-13CV, Standby Liquid Control	Air
X-205 (Note 1)	PC-233MV and PC-237AV, Purge and Vent Supply to Torus	Air
X-205	PC-13CV and PC-243AV, Torus Vacuum Relief	Air
X-205	PC-14CV and PC-244AV, Torus Vacuum Relief	Air
X-205	ACAD-1303MV and ACAD-1304MV, Supply to Torus	Air
X-210A	RCIC-MO-27 and RCIC-13CV, RCIC Minimum Flow Line	Air
X-210A	RHR-MO-21A, RHR to Torus	Air
X-210A	RHR-MO-16A, RHR-10CV, and RHR-12CV, RHR Minimum Flow Line	Air
X-210B	RHR-MO-21B, RHR to Torus	Air
X-210B	HPCI-17CV and HPCI-MO-25, HPCI Minimum Flow Line	Air
X-210B	RHR-MO-16B, RHR-11CV, and RHR-13CV, RHR Minimum Flow Line	Air
X-210A and 211A	RHR-MO-34A, RHR-MO-38A, and RHR-MO-39A, RHR to Torus	Air
X-210B and 211B	RHR-MO-34B, RHR-MO-38B, and RHR-MO-39B, RHR to Torus	Air
X-211B	ACAD-1301MV and ACAD-1302MV, Supply to Torus	Air
X-212	RCIC-15CV and RCIC-37, RCIC Turbine Exhaust	Air
X-214	HPCI-15CV and HPCI-44, HPCI Turbine Exhaust	Air
X-214	HPCI-AO-70 and HPCI-AO-71, HPCI Turbine Exhaust Drain	Air
X-214	RHR-MO-166A and RHR-MO-167A RHR Heat Exch. Vent	Air
X-214	RHR-MO-166B and RHR-MO-167B RHR Heat Exch. Vent	Air
X-220 (Note 1)	PC-230MV, PC-245AV, and PC-305MV Purge and Vent Exhaust from Torus	Air
X-220	ACAD-1308MV, Bleed from Torus	Air
X-221	RCIC-12CV and RCIC-42, RCIC Vacuum Line	Air
X-222	HPCI-50 and HPCI-16CV, HPCI Turbine Drain	Air

TABLE 3.7.4 (page 3)

PRIMARY CONTAINMENT TESTABLE ISOLATION VALVES

PEN. NO.	VALVE NUMBERS	TEST MEDIA
X-223A	CS-MO-26A and CS-MO-5A, Core Spray Test and Minimum Flow	Air
X-223B	CS-MO-26B and CS-MO-5B, Core Spray Test and Minimum Flow	Air
X-225A-D	RHR-MO-13A, RHR-MO-13C, RHR-MO-13B, RHR-MO-13D, RHR Suction From Torus	Air
X-224	RCIC-MO-41, RCIC Suction From Torus	Air
X-226	HPCI-MO-58, HPCI Suction From Torus	Air
X-227A, B	CS-MO-7A and CS-MO-7B, Core Spray Suction From Torus	Air

Notes to Table 3.7.4

1. Once per operating cycle, while shutdown, the devices which limit the maximum opening angle to 60° shall be verified functional for the following valves:

   PC-230MV
   PC-231MV
   PC-232MV
   PC-233MV

check of the temperature and volume is adequate to assure that adequate heat removal capability is present.

The interiors of the drywell and suppression chamber are painted to prevent rusting. The inspection of the paint during each major refueling outage, approximately once per year, assures the paint is intact. Experience with this type of paint at fossil fueled generating stations indicates that the inspection interval is adequate.

The intent of Specification 3.7.A.2.b is to reduce the probability of a LOCA occurrence when the 24-inch purge and vent valves are open in series. These valves are normally closed during power operation to minimize reliance on the valve operators to ensure containment integrity. The requirements for Standby Gas is due to the damage the filters would experience from excessive difference pressure caused by a LOCA with the 24-inch exhaust valves open in series from the drywell or suppression chamber. This specification does allow venting with the inboard exhaust bypass valve and the outboard exhaust valve both open in series and the time does not count against the yearly limit. The NRC has accepted the determination that due to the small size of the bypass valve, there is no chance of damage to the filters if a LOCA occurs while venting the containment through the bypass with a SBGT system on line. The term "calendar year" is a period of time beginning on January 1 and ending on December 31 for each numbered year.

3.7.A.3 & 4 and 4.7.A.3 & 4 VACUUM BREAKERS

The purpose of the vacuum relief valves is to equalize the pressure between the drywell and suppression chamber and reactor building so that the structural integrity of the containment is maintained. The vacuum relief system from the pressure suppression chamber to reactor building consists of two 100% vacuum relief breakers (2 parallel sets of 2 valves in series). Operation of either system will maintain a pressure differential of less than 2 psi, the external design pressure. One valve may be out of service for repairs for a period of 7 days. If repairs cannot be completed within 7 days the reactor coolant system is brought to a condition where vacuum relief is no longer required.

The capacity of the 12 drywell vacuum relief valves are sized to limit the pressure differential between the suppression chamber and drywell during post-accident dry-well cooling operations to well under the design limit of 2 psi. They are sized on the basis of the Bodega Bay pressure suppression system tests. The ASME Boiler and Pressure Vessel Code, Section III, Subsection B, for this vessel allows a 2 psi differential; therefore, with three vacuum relief valves secured in the closed position and 9 operable valves, containment integrity is not impaired.

3.7.A.5 and 4.7.A.5 OXYGEN CONCENTRATION

Safety Guide 7 assumptions for Metal-Water reaction result in hydrogen concentration in excess of the Safety Guide 7 flammability limit. By keeping the oxygen concentration less than 4% by volume the requirements of Safety Guide 7 are satisfied.

The occurrence of primary system leakage following a major refueling outage or other scheduled shutdown is much more probable than the occurrence of the loss-of-coolant accident upon which the specified oxygen concentration limit is based. Permitting access to the drywell for leak inspections during a startup is judged prudent in terms of the added plant safety offered without significantly reducing the margin of safety. Thus, to preclude the possibility of starting the reactor and operating for extended period of time with significant leaks in the primary system is at or near rated operating temperature and pressure. The 24-hour period to provide inerting is judged to be sufficient to perform the leak inspection and establish the required oxygen concentration.

results in a failure probability of 1.1×10^{-7} that a line will not isolate. More frequent testing for valve operability results in a greater assurance that the valve will be operable when needed.

In order to assure that the doses that may result from a steam line break do not exceed the 10CFR100 guidelines, it is necessary that no fuel rod perforation resulting from the accident occur prior to closure of the main steam line isolation valves. Analyses indicate that fuel rod cladding perforations would be avoided for main steam valve closure times, including instrument delay, as long as 10.5 seconds. The primary containment is penetrated by several small diameter instrument lines connected to the reactor coolant system. Each instrument line contains a 0.25 inch restricting orifice inside the primary containment and an excess flow check valve outside the primary containment. A program for periodic testing and examination of the excess flow check valves is performed as follows:

1. Vessel at pressure sufficient to actuate valves. This could be at time of vessel hydro following a refueling outage.

2. Isolate sensing line from its instrument at the instrument manifold.

3. Provide means for observing and collecting the instrument drain or vent valve flow.

4. Open vent or drain valve.

   a. Observe flow cessation and any leakage rate.

   b. Reset valve after test completion.

5. The head seal leak detection line cannot be tested in this manner. This valve will not be exposed to primary system pressure except under unlikely conditions of seal failure where it could be partially pressurized to reactor pressure. Any leakage path is restricted at the source and therefore this valve need not be tested. This valve is in a sensing line that is not safety related.

6. Valves will be accepted if a marked decrease in flow rate is observed and the leakage rate is acceptable.

The operators for containment vent/purge valves PC-230MV, PC-231MV, PC-232MV, and PC-233MV have devices in place to limit the maximum opening angle to 60 degrees. This has been done to ensure these valves are able to close against the maximum differential pressure expected to occur during a design basis LOCA.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 129 TO FACILITY OPERATING LICENSE NO. DPR-46

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

DOCKET NO. 50-298

1.0 INTRODUCTION

By letter dated April 19, 1988, as supplemented April 19, 1989, the Nebraska Public Power District (the licensee) requested an amendment to Facility Operating License No. DPR-46 for the Cooper Nuclear Station. The proposed amendment would change the Technical Specifications to add Limiting Conditions for Operation and Surveillance Requirements relating to containment integrity during venting and purging operations. The amendment application responds to generic issues addressed under Multi-Plant Action Item B-24 "Containment Venting and Purging at Power."

2.0 DISCUSSION AND EVALUATION

Currently, Cooper has no Technical Specification (TS) governing the primary containment purge and vent system operation. The proposed TS changes would restrict the system operation as described below.:

A. Vent and Purging Time and Flow Path Limits (TS 3.7.A.2b): Venting and purging of the primary containment via the Standby Gas Treatment System, through the 24-inch containment exhaust and supply isolation valves, would be limited to 90 hours per calendar year when coolant temperature is greater than 212 deg. F. At any one time, purge system isolation valves may only be open in one supply line and one exhaust line. During such operations, both trains of the Standby Gas Treatment System would be required to be operable with only one train in use for venting. Alternate venting via a two-inch bypass valve installed around the 24-inch inboard isolation valve would not count against the 90-hour limitation.

Evaluation: Cooper Nuclear Station is required to use the Standby Gas Treatment System when conducting vent/purge operations (T.S. 3.21.C.7). This action reduces the radioactive gaseous effluent. The licensee has provided an analysis which demonstrates that when venting via the 2-inch bypass valve, the Standby Gas Treatment System is not subject to damaging LOCA forces. However, should a LOCA occur while venting/purging via the Standby Gas Treatment System, with the 24-inch containment isolation valves open, the system filters would be subject to damage. The present Technical Specifications place no time limitation on such operation. By restricting the amount of purging/venting of the primary containment through both 24-inch containment isolation valves to 90-hours/year, with the additional limitations that only one train of the Standby Gas Treatment System

be used, and the other be operable, the risk associated with such an operation is reduced to an acceptable level as prescribed by Standard Review Plan (S.R.P.) Section 6.2.4 paragraph II.6.n. The SRP states that the 90-hour/year limitation should be included in the Technical Specifications for facilities in which the size of the vent/purge piping is such that reliability of the containment isolation function is affected. Based on conformance to Standard Review Plan Section 6.2.4 acceptance criteria, the proposed change is acceptable.

B. Isolation Valve Operability (Table 3.7.4): A requirement would be added to verify the operability of position limiting devices installed on the motor-operated 24-inch containment vent/purge isolation valves once per operating cycle. The devices limit the opening angle of the valves to a 60 degree angle to ensure the capability of the valve operators to close them against LOCA dynamic forces.

Evaluation: The need for such devices was shown in the licensee's "Vent Valve Operability Under LOCA Conditions" (Ref: Staff Safety Evaluation dated July 10, 1987) which indicates that the position limits are necessary to ensure that valve operator torque capability is adequate to close the valves under LOCA dynamic conditions. It is the staff's position that the proper adjustment and installation of such devices should be ensured by Technical Specifications if the devices are subject to drift or other disabling conditions. Based on the above, the proposed change is acceptable.

In addition to installation of the position limiting devices, the licensee has taken additional actions to ensure valve operability under LOCA conditions. These actions include changing the physical orientation of certain valves, readjustment of torque switch settings, and installation of debris strainers. With these changes in place the Cooper purge and vent valves are aligned in the same physical orientation as the test valves and can be expected to function in the same manner as the test valves. This is acceptable to the staff.

3.0 ENVIRONMENTAL CONSIDERATION

The amendment involves a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendment involves 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 exposures. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR Section 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 amendment.

4.0 CONCLUSION

The staff 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: May 15, 1989

Principal Contributors: Paul W. O'Connor
Thyagaraja Chandrasekaran