January 31, 1990

Docket No. 50-440

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Mr. Alvin Kaplan, Vice President
Nuclear Group
The Cleveland Electric Illuminating Company
10 Center Road
Perry, Ohio 44081

Dear Mr. Kaplan:

SUBJECT: EMERGENCY TECHNICAL SPECIFICATION CHANGE, PERRY UNIT 1, RCIC EQUIPMENT ROOM DELTA TEMPERATURE-HIGH, AMENDMENT NO. 26 TO FACILITY OPERATING LICENSE NO. NPF-58 (TAC NO. 75803)

The Commission has issued the enclosed Amendment No. 26 to Facility Operating License No. NPF-58 for the Perry Nuclear Power Plant, Unit No. 1. This amendment revises the Technical Specifications in response to your application dated January 19, 1990 as modified January 26, 1990.

This amendment revises the setpoint for RCIC (Reactor Core Isolation Cooling) Equipment Room Delta Temperature-High on Table 3.3.2-2 of the Technical Specifications (TS). Your January 26, 1990 application requested that this amendment be treated on an emergency basis as insufficient time exists for the Commission to provide its usual 30-day notice without causing an unnecessary plant shutdown. On January 18, 1990, the RCIC system was declared inoperable because an operational test of the RCIC system indicated that a combination of cold lake water temperature and low heat load on the Emergency Closed Cooling system could cause RCIC to spuriously trip on high RCIC equipment room delta temperature during a loss of feedwater plant transient. RCIC is currently under a limiting condition for operation (LCO) which would require shutdown of the plant on February 1, 1990.

We have reviewed the emergency circumstances associated with your request and have concluded that this change to the TS is necessary to avoid plant shutdown and that you have provided a sufficient basis to demonstrate that the circumstances could not have been avoided as required by 10 CFR 50.91(a)(5).

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A copy of the Safety Evaluation is also enclosed. Notice of issuance and Final Determination of No Significant Hazards Considerations and Opportunity for Hearing will be included in the Commission's next biweekly Federal Register Notice.

Sincerely,

/s/

Timothy G. Colburn, Sr. Project Manager
Project Directorate III-3
Division of Reactor Projects - III, IV, V & Special Projects
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 26 to License No. NPF-58
2. Safety Evaluation

cc w/enclosures:
See next page

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

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY, ET AL.

DOCKET NO. 50-440

PERRY NUCLEAR POWER PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 26
License No. NPF-58

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

   A. The application for amendment by The Cleveland Electric Illuminating Company, Duquesne Light Company, Ohio Edison Company, Pennsylvania Power Company, and Toledo Edison Company (the licensees) dated January 19 as modified January 26, 1990 complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this 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. NPF-58 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 26 are hereby incorporated into this license. The Cleveland Electric Illuminating Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective on January 31, 1990.

FOR THE NUCLEAR REGULATORY COMMISSION

John A. Zwolinski, Assistant Director
for Region III
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: January 31, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 26

FACILITY OPERATING LICENSE NO. NPF-58

DOCKET NO. 50-440

Replace the following pages of the Appendix "A" Technical Specifications with the attached pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change. Overleaf pages are provided to maintain document completeness.

Remove	Insert
Table 3.3.2-2 (continued) (page 3/4 3-19)	Table 3.3.2-2 (continued) (page 3/4 3-19)
Table 3.3.2-2 (continued) (page 3/4 3-20)	Table 3.3.2-2 (continued) (page 3/4 3-20)

TABLE 3.3.2-2 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION		TRIP SETPOINT	ALLOWABLE VALUE
5.	REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION		
a.	RCIC Steam Line Flow - High	$\leq$ 290" H_2O**	$\leq$ 298.5" H_2O**
b.	RCIC Steam Supply Pressure - Low	$\geq$ 60 psig	$\geq$ 55 psig
c.	RCIC Turbine Exhaust Diaphragm Pressure - High	$\leq$ 10 psig	$\leq$ 20 psig
d.	RCIC Equipment Room Ambient Temperature - High	$\leq$ 143.4°F	$\leq$ 145.9°F
e.	RCIC Equipment Room Δ Temperature - High	$\leq$ 70.9°F#	$\leq$ 72.2°F#
f.	Main Steam Line Tunnel Ambient Temperature - High	$\leq$ 154.4°F**	$\leq$ 158.9°F**
g.	Main Steam Line Tunnel Δ Temperature - High	$\leq$ 103.6°F**	$\leq$ 107.4°F**
h.	Main Steam Line Tunnel Temperature Timer	$\leq$ 29 minutes	$\leq$ 30 minutes
i.	RHR Equipment Room Ambient Temperature - High	$\leq$ 157.4°F	$\leq$ 159.9°F
j.	RHR Equipment Room Δ Temperature - High	$\leq$ 50.65°F	$\leq$ 52.4°F
k.	RCIC Steam Flow High Timer	3 seconds $\leq$ t $\leq$ 13 seconds	3 seconds $\leq$ t $\leq$ 13 seconds
l.	Drywell Pressure - High	$\leq$ 1.68 psig	$\leq$ 1.88 psig
m.	Manual Initiation	NA	NA

TABLE 3.3.2-2 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
6. RHR SYSTEM ISOLATION		
a. RHR Equipment Area Ambient Temperature - High	$\leq$ 157.4°F	$\leq$ 159.9°F
b. RHR Equipment Area Δ Temperature - High	$\leq$ 50.65°F	$\leq$ 52.4°F
c. RHR/RCIC Steam Line Flow - High	$\leq$ 105" H_2O**	$\leq$ 114" H_2O**
d. Reactor Vessel Water Level - Low, Level 3	$\geq$ 177.7 inches*	$\geq$ 177.1 inches
e. Reactor Vessel (RHR Cut-in Permissive) Pressure - High	$\leq$ 135 psig	$\leq$ 150 psig
f. Drywell Pressure - High	$\leq$ 1.68 psig	$\leq$ 1.88 psig
g. Manual Initiation	NA	NA

*See Bases Figure B 3/4 3-1.

**Initial setpoint. Final setpoint to be determined during startup test program. Any required change to this setpoint shall be submitted to the Commission within 90 days of test completion.

#These values are in effect until lake temperatures exceed 55°F.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 26 TO FACILITY OPERATING LICENSE NO. NPF-58

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY, ET AL.

PERRY NUCLEAR POWER PLANT, UNIT NO. 1

DOCKET NO. 50-440

1.0 INTRODUCTION

On January 7, 1990, the Perry Nuclear Power Plant Unit 1 experienced a loss of feedwater transient and reactor scram which resulted in automatic initiation of High Pressure Core Spray and Reactor Core Isolation Cooling (RCIC) at level 2 in the reactor vessel. After approximately 37 minutes of operation, the RCIC system isolated because of indicated high differential temperature (delta-T) in the RCIC equipment room. The high delta-T trip measures the temperature between the RCIC room temperature and the downstream temperature of the RCIC room cooler cooling coils. It is intended to trip RCIC upon indication of a steam leak.

Investigation into the cause of the isolation by the licensees revealed that the trip was not caused by a steam leak in the RCIC equipment room but by a decreasing temperature indication at the RCIC room cooler thermocouple (of about 68-70°F) with a steady ambient room temperature of about 105-107°F. The RCIC room cooler cooling coils are cooled by the Emergency Closed Cooling (ECC) system which is in turn cooled by the Emergency Service water (ESW) system whose temperature is highly dependent on lake water temperature. As lake temperature decreases, so does ESW temperature and correspondingly, ECC temperature. As ECC water is being supplied to the RCIC room cooler during the winter months (with lake temperatures as low as 32°F) air flow across the cooling coils causes the temperature sensed by the downstream thermocouple to decrease. During the January 7 event, the decrease was sufficiently low enough as to actuate the high delta-T trip even when no steam leak existed in the RCIC equipment room. Further investigation into the event by the licensees indicated that ECC flow to the cooler was also higher than desired (6.5 gallons per minute (gpm) versus 4.3 gpm).

Based on the results of start-up tests conducted in February 1987, the licensees attributed the spurious trip of the RCIC system to this approximately 50 percent higher cooler flow rate. The licensees then reestablished and verified system parameters to be per the 1987 start-up test, declared RCIC operable, and committed to conduct a confirmatory RCIC operational test as soon as practical upon restart of the plant. On January 18, 1990, the licensees conducted their confirmatory test to verify RCIC operability. While RCIC did not isolate on high delta-T, the margin to trip was sufficiently narrow, that the licensees

could not ensure RCIC reliability during future responses to plant transients or accidents. The licensees declared RCIC inoperable and entered the Action Statement of TS 3.7.3 which requires restoration of RCIC to operable status within 14 days or be in hot shutdown within 12 hours. The plant would be required to shutdown on February 1, 1990.

On January 19, 1990, the licensees submitted a TS change request pursuant to 10 CFR 50.91(a)(5) describing the emergency circumstances that existed and why they could not be avoided. The proposed change would delete the RCIC high delta-T isolation feature from the TS. Based upon discussions with the staff, the licensees modified their proposed TS change on January 26, 1990 to modify the trip setpoint for the RCIC high delta-T trip.

2.0 DISCUSSION

The proposed change would temporarily revise the Reactor Core Isolation Cooling (RCIC) Equipment Room Differential Temperature (delta-T)-High setpoint and allowable value. This change is being made on an emergency, temporary basis for the winter months, in order to avoid unnecessary isolations of RCIC during system operation with no steam leaks present. The proposed setpoint (and allowable value) bounds the range of conditions which might be experienced during any operational transients or accidents from the present time until lake temperatures reach 55°F, which usually occurs in early May. The setpoint was chosen with margin to allow for normal RCIC system operation under winter conditions, while still retaining the capability to detect and isolate leaks in the lower range of crack sizes. A change in initial conditions for operational purposes is that the ECC outlet valve to the room cooler would no longer be throttled in winter due to concerns that fluctuations in ECC system flow rates could invalidate any calculations. With the valve throttled down to an almost closed position in the winter, even minor changes in valve position could result in a large percentage change in flow rate through the cooler.

In determining the new delta-T isolation setpoint, the licensees performed several bounding steam leak cases included a "cold" case with lake temperature at 33°F and no heat loads on ECC other than the RCIC room cooler, and a "cool" case with lake temperature at 55°F and maximum post-small-break LOCA plant heat loads on ECC such as the control complex chiller units. These calculations address these bounding conditions, and also consider the RCIC room arrangement and its interconnections with adjoining rooms, heat sinks such as walls which absorb heat from the released steam, pressurization effects and HVAC impacts. The results of these bounding cases were analyzed and the optimal setpoint for these conditions was chosen. The licensees have determined that the proposed setpoint for RCIC equipment room delta-T would be sensitive enough to detect steam leaks of between approximately 5 gpm (32°F lake temperature) and 25 gpm (55°F lake temperature).

Based upon the staff's review of the licensees' submittals, the staff finds that the proposed TS change will provide adequate diversity of trip function for steam leaks associated with crack sizes of consideration and will also

avoid spurious isolations of the RCIC system during winter operation. Thus, for the interim period until lake temperature exceeds 55°F, the staff finds the licensees' proposed TS change to be acceptable.

3.0 EMERGENCY CIRCUMSTANCES

The licensees have provided arguments with respect to the emergency circumstances existing with respect to the amendment request. The licensees have stated that the plant is currently in a TS Action Statement which will require plant shutdown if the TS change is not approved prior to February 1, 1990. With respect to why the emergency situation occurred and why it could not be avoided, the licensees have stated that until the RCIC differential temperature isolation actuation instrumentation failed to meet the licensees' acceptance criteria during the January 18, 1990 testing, the licensees believed that corrective action taken in response to the January 7, 1990 event was sufficient to restore operability. The licensees believed that restoration of system configuration to the 1987 start-up test configuration would allow RCIC operation without spurious delta-T isolation. Therefore, prior to January 18, 1990, the licensees' could not have foreseen or avoided the emergency situation. The staff has evaluated the licensees' arguments of the emergency circumstances associated with this amendment request and has determined that the need for immediate relief from the TS under consideration would not have been avoided and that, therefore, valid emergency circumstances exist.

4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The standards used to arrive at a determination that a request for amendment requires no significant hazards consideration are included in the Commission's Regulations, 10 CFR 50.92, which states that the operation of the facility in accordance with the proposed amendment would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the possibility of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety.

The licensees have provided the following discussion as to whether the proposed change involves a significant hazards consideration:

(1) The proposed change does not involve a significant increase in the probability or consequences of a previously evaluated accident.

The differential temperature isolation instrumentation provides monitoring for leaks. Therefore, the probability for leak initiation is not affected by the revision of the delta-T isolation setpoint.

The consequences of a previously evaluated accident also have not changed. The range of possible RCIC steamline breaks (up to and including a circumferential steamline break) is not affected by this proposed change. The leak detection isolation actuation instrumentation

and alarms cover a wide range of steam piping breaks including both small leaks and large breaks in the RCIC line. As such any significant leak in the RCIC room will continue to be sensed by redundant and diverse instrumentation with appropriate setpoints for alarm and/or isolation capability. As such the consequences of a RCIC steamline break will not change, and are still bounded by the steamline break outside of containment scenario analyzed in USAR Section 15.6.4. Thus, the consequences of a previously evaluated accident have not changed.

(2) The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated. As stated above the differential temperature isolation actuation instrumentation is a monitoring system. Revision of the isolation setpoint of this monitoring system cannot create a new type of accident, since breaks of the RCIC steamline, up to and including a circumferential break, are bounded by other accidents presently analyzed in USAR Section 15.6.4.

(3) The proposed change does not involve a significant reduction in the margin of safety. There will still exist sufficient redundant and diverse leak detection instrumentation with appropriate setpoints to detect steam leaks/breaks in the RCIC area. This change does not therefore affect any accident analysis nor does it have any effect on performance characteristics of safety systems. As such it will not result in a reduction in the margin of safety. Also, since this change will increase the reliability of the RCIC system by reducing the possibility of an unnecessary isolation of RCIC when it is being called upon to restore reactor water level, overall plant safety will be slightly increased.

The staff has reviewed the licensees' determination with respect to significant hazards considerations. The staff has determined that the licensees have adequately analyzed the effects of the proposed change and adequately determined its safety significance. Accordingly, based on the above discussions, the Commission has determined that the proposed amendment involves no significant hazards considerations.

5.0 STATE CONSULTATION

The staff attempted to contact the State of Ohio on January 29 and January 30, 1990 to obtain comments on this amendment request. The State of Ohio representative had no comments.

6.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change to a requirement with respect to 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 exposure. The Commission has made a determination that this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 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 this amendment.

7.0 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 this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: T. Colburn

Dated: January 31, 1990