

NOV 13 1987

Docket No. 50-334

Mr. J. D. Sieber, Vice President
Nuclear Operations
Duquesne Light Company
Post Office Box 4
Shippingport, PA 15077

Dear Mr. Sieber:

SUBJECT: ISSUANCE OF AMENDMENT (LICENSING ACTION TAC 57468)

The Commission has issued the enclosed Amendment No. 118 to Facility Operating License No. DPR-66 for the Beaver Valley Power Station, Unit No. 1, in response to your application dated January 14, 1986 and supplemented by letters dated July 25, 1986 and June 12, 1987.

The amendment changes the Technical Specifications for Beaver Valley Unit No. 1 to accommodate replacement of Sostman resistance temperature detectors (RTDs) with Rosemount RTDs in the reactor protection system. Specifically, the changes added two lag compensator terms to the setpoint equations and reduced the response time requirement from 6 to 4 seconds.

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

Sincerely,

~~ORIGINAL SIGNED COPY~~

Peter S. Tam, Project Manager
Project Directorate I-4
Division of Reactor Projects I/II

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Enclosures:

1. Amendment No. 118 to DPR-66
2. Safety Evaluation

cc w/enclosures:
See next page

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OGC's comment re. NSHC has been addressed by addition of a paragraph to the bottom of first page of SE. PST 11/4/87

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Mr. J. D. Sieber
Duquesne Light Company

Beaver Valley 1 Power Station

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

DUQUESNE LIGHT COMPANY

OHIO EDISON COMPANY

PENNSYLVANIA POWER COMPANY

DOCKET NO. 50-334

BEAVER VALLEY POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No118
License No. DPR-66

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Duquesne Light Company, Ohio Edison Company, and Pennsylvania Power Company (the licensees) dated January 14, 1986 and supplemented by letters dated July 25, 1986 and June 12, 1987 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.(?) of Facility Operating License No. DPR-66 is hereby amended to read as follows:

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(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 18, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This amendment is effective on issuance, to be implemented no later than 30 days after issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



John F. Stolz, Director
Project Directorate I-4
Division of Reactor Projects I/II

Attachment:
Changes to the Technical
Specifications

Date of Issuance: November 13, 1987

ATTACHMENT TO LICENSE AMENDMENT NO. 118

FACILITY OPERATING LICENSE NO. DPP-66

DOCKET NO. 50-334

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised pages are identified by amendment number and contain vertical lines indicating the area of change.

Remove

2-8
2-10
3/4 3-9

Insert

2-8
2-10
3/4 3-9

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

NOTATION

NOTE 1: Overtemperature $\Delta T \left(\frac{1}{1+\tau_4 S} \right) \leq \Delta T_0 \left[K_1 - K_2 \left(\frac{1+\tau_1 S}{1+\tau_2 S} \right) \left[T \left(\frac{1}{1+\tau_5 S} \right) - T' \right] + K_3 (P-P') - f (\Delta I) \right]$

- where:
- ΔT_0 = Indicated ΔT at RATED THERMAL POWER
 - T = Average temperature, °F
 - T' = 576.3°F (indicated T_{avg} at RATED THERMAL POWER)
 - P = Pressurizer pressure, psig
 - P' = 2235 psig (indicated RCS nominal operating pressure)
 - $\frac{1+\tau_1 S}{1+\tau_2 S}$ = The function generated by the lead-lag controller for T_{avg} dynamic compensation.
 - τ_1 & τ_2 = Time constants utilized in the lead-lag controller for T_{avg}
 $\tau_1 = 30$ secs, $\tau_2 = 4$ secs.
 - $\frac{1}{1+\tau_4 S}$ = Lag compensator on measured ΔT
 - τ_4 = Time constant utilized in the lag compensator for ΔT , ≤ 2 secs.
 - $\frac{1}{1+\tau_5 S}$ = Lag compensator on measured T_{avg}
 - τ_5 = Time constant utilized in the lag compensator for $T_{avg} \leq 2$ secs.
 - S = Laplace transform operator.

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTSNOTATION

NOTE 2: Overpower $\Delta T \left(\frac{1}{1+\tau_4 S} \right) \leq \Delta T_0 \left[K_4 - K_5 \left(\frac{\tau_3 S}{1+\tau_3 S} \right) \left(\frac{1}{1+\tau_5 S} \right)^T - K_6 \left[T \left(\frac{1}{1+\tau_5 S} \right) - T'' \right] - f(\Delta I) \right]$

where:	ΔT_0	=	Indicated ΔT at RATED THERMAL POWER
	T	=	Average temperature, °F
	T''	=	Indicated T_{avg} at RATED THERMAL POWER $\leq 576.3^\circ\text{F}$
	K_4	=	1.07
	K_5	=	0.02/°F for increasing average temperature.
	K_6	=	0.00128 for $T > T''$; $K_6 = (0)$ for $T \leq T''$
	$\frac{\tau_3 S}{1+\tau_3 S}$	=	The function generated by the rate lag controller for T_{avg} dynamic compensation
	τ_3	=	Time constant utilized in the rate lag controller for T_{avg} , $-\tau = 10$ secs.
	$\frac{1}{1+\tau_4 S}$	=	Lag compensator on measured ΔT
	τ_4	=	Time constant utilized in the lag compensator for ΔT , ≤ 2 secs.
	$\frac{1}{1+\tau_5 S}$	=	Lag compensator on measured T_{avg}
	τ_5	=	Time constant utilized in the lag compensator for $T_{avg} \leq 2$ secs.
	S	=	Laplace transform operator.
	$f(\Delta I)$	=	0 for all ΔI

NOTE 3: The channel's maximum trip point shall not exceed its computed trip point by more than 4 percent.

TABLE 3.3-2

REACTOR TRIP SYSTEM INSTRUMENTATION RESPONSE TIMES

<u>FUNCTIONAL UNIT</u>	<u>RESPONSE TIME</u>
1. Manual Reactor Trip	NOT APPLICABLE
2. Power Range, Neutron Flux	≤ 0.5 seconds*
3. Power Range, Neutron Flux, High Positive Rate	
4. Power Range, Neutron Flux, High Negative Rate	≤ 0.5 seconds*
5. Intermediate Range, Neutron Flux	NOT APPLICABLE
6. Source Range, Neutron Flux	NOT APPLICABLE
7. Overtemperature ΔT	≤ 4.0 seconds*
8. Overpower ΔT	NOT APPLICABLE
9. Pressurizer Pressure--Low	≤ 2.0 seconds
10. Pressurizer Pressure--High	≤ 2.0 seconds
11. Pressurizer Water Level--High	NOT APPLICABLE

* Neutron detectors are exempt from response time testing. Response time shall be measured from detector output or input of first electronic component in channel.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 118 TO FACILITY OPERATING LICENSE NO. DPR-66

DUQUESNE LIGHT COMPANY

OHIO EDISON COMPANY

PENNSYLVANIA POWER COMPANY

BEAVER VALLEY POWER STATION, UNIT NO. 1

DOCKET NO. 50-334

1.0 INTRODUCTION

In a letter dated April 22, 1985 (S. A. Varga to J. J. Carey) we notified the licensee (Duquesne Light Company) that the overtemperature ΔT response time as specified in the Technical Specifications may not appropriately reflect that assumed in the FSAR. The licensee agreed with our assessment in a letter dated June 11, 1985. By letter dated January 14, 1986, the licensee formally submitted a change request. Our evaluation of the proposed change is contained in the following section.

The staff's Inspection Report 50-334/85-20 described the licensee's replacement of the original Sostman resistance temperature detectors (RTDs) with Rosemount RTDs. The response times of these two models of RTDs are different. The original FSAR analysis addressed both model RTDs, and hence the replacement of one model with the other does not result in need for a reanalysis.

However, after all Sostman RTDs have been replaced with Rosemount RTDs, the unit experienced numerous ΔT alarms (see details in the referenced Inspection Report). The licensee modified wiring of the reactor protection system to address the problem, and submitted corresponding proposed Technical Specification changes in its January 14, 1986 letter. By letter dated July 25, 1986 the licensee made a revision to clarify the original submittal.

As a result of our September 23, 1986 request for additional information, the licensee provided a response in the form of Westinghouse Topical Reports WCAP-11462 (Proprietary) and WCAP-11463 (non-proprietary), both entitled "Overtemperature and Overpower Delta-T Reactor Trip Setpoint Calculations for Beaver Valley Unit 1" (Letter, J. Sieber to NRC, June 12, 1987).

The staff made a proposed no-significant-hazards determination on March 12, 1986 (51 FR 8589). The licensee's July 25, 1986 and June 12, 1987 submittals provided only clarification and additional technical support. The staff therefore determined that there was no need to publish a revised NSHC determination.

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2.0 DISCUSSION AND EVALUATION

The requested amendment would change the algorithms for the overtemperature-delta T and the overpower-delta T trips to take into account the changeover from the use of Sostman RTDs to faster acting Rosemount RTDs. In addition, a correction would be made to the value of the response time of the overtemperature-delta T trip.

The change to the overtemperature-delta T and overpower-delta T trip algorithms consists of the insertion of lag compensator terms on delta T and T_{avg} . The lag circuits are installed to reduce the probability for spurious trips due to the fast response of the Rosemount RTDs. The time constants (the lag terms) appropriately reflect the plant design and ensure that correct adjustment of the lag network will be maintained. Thus the change has no effect on the safety analysis and is acceptable.

The maximum permitted value of the response time for the overtemperature-delta T trip has been reduced from 6 to 4 seconds. The 6 second value includes a 2-second allowance for coolant transit and thermal lag response time associated with the RTD bypass manifold. This delay is not part of the instrument response time and is not measurable. Furthermore, the change does not alter the value used in the safety analyses, is consistent with what we stated in our April 22, 1985 letter, and adds conservatism. We find the change to be acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves changes 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 previously issued a proposed finding that this 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 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.

4.0 CONCLUSION

We have 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.

Dated: November 13, 1987

Principal Contributor:

F. Burrows, reviewer
W. Brooks, reviewer