



Duquesne Light

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January 27, 1987

United States Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, PA 19406

ATTENTION: Dr. Thomas E. Murley
Administrator

SUBJECT: Beaver Valley Power Station - Unit No. 2
Docket No. 50-412
Equipment Qualification of Core Exit Thermocouple System
Potential Significant Deficiency Report 85-03 Final Report

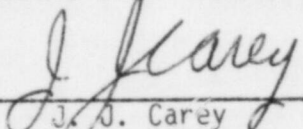
- REFERENCE:
1. Westinghouse Letter DMW-D-5633; 8/28/86; Accuracy Requirement Evaluation for Inadequate Core Cooling Instrumentation
 2. Westinghouse Letter DMW-D-5623; 8/29/86; BVPS-2 Emergency Operating Procedures

Gentlemen:

This is the Final Report in reference to the Equipment Qualification of Core Exit Thermocouple System as reported to the NRC by Mr. S. D. Hall of Duquesne Light Company on May 10, 1985. Westinghouse has completed their evaluation of this system and has recommended that Duquesne Light Company with recommended corrective actions. Pursuant to the requirements of 10CFR50.55(e), it is anticipated that no additional reports will be required.

DUQUESNE LIGHT COMPANY

By


J. J. Carey
Sr. Vice President

LMR/ijr
NRC/LMR/SDR/8503
Attachment
AR/NAR

- cc:
- Mr. P. Tam, Project Manager (w/a)
 - Mr. J. M. Taylor, Director (3) (w/a)
 - Mr. J. Beall, Sr. Resident Inspector (w/a)
 - Ms. A. Asars, NRC Resident Inspector (w/a)
 - INPO Records Center (w/a)
 - NRC Document Control Desk (w/a)

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Attachment

1. Summary

Westinghouse (W) Nuclear Safety Department reports that, during the course of Environmental Qualification (EQ) testing, potential errors in excess of those previously assumed were discovered in the safety grade core exit thermocouple system. W reports that this type system has been supplied to Beaver Valley Power Station Unit No. 2 (BVPS-2).

2. Immediate Action Taken

W had reported this concern, under 10CFR21, to the NRC on May 9, 1985. On May 10, 1985, after receipt of a copy of the W 10CFR21 report, Mr. S. D. Hall, acting manager of Duquesne Light Company's (DLC) Regulatory Affairs Department, notified Mr. Lowell Tripp at the NRC's Region I office, that DLC considered this concern to be potentially reportable in accordance with 10CFR50.55(e).

3. Description of Deficiency

During EQ testing, W determined that total core exit thermocouple system errors could exceed previously assumed values during High Energy Line Break (HELB) conditions. W reports that the signal would remain functional in spite of total system errors larger than those on which the W Emergency Response Guidelines were based.

4. Analysis of Safety Implications

Potential consequences of exceeding the assumed temperature channel accuracy requirements include the following: (1) delay in terminating SI following a secondary high energy line rupture or small LOCA which could potentially result in water relief through the pressurizer safety and/or relief valves; (2) inappropriate SI termination following a small LOCA necessitating operator action to reinitiate SI; and (3) failure of the operator to trip the RCPs following a small LOCA if subcooling margin is utilized as the criterion.

Occurrence of any of the above consequences due to increased temperature uncertainty in the RCS subcooling margin could result in consequences more severe than currently described in the Final Safety Analysis Report (FSAR) accident analyses.

5. Corrective Action to Resolve the Deficiency

Based on the Westinghouse final evaluation report (Ref. 1), the following changes have been made at BVPS-2:

- a. The Reactor Vessel Level Indication System (RVLIS) temperature input has been changed from core exit thermocouples (CET's) to loop resistance temperature detectors (RTD's).

- b. The Inadequate Core Cooling (ICC) setpoint of 700°F has been increased to 729°F to incorporate actual worse case post-accident errors of the CETs (which functions as a temperature reading only, not an input to RVLIS). This change was made in Emergency Operating Procedures ES-0.4, ES-1.4, ES-3.3, ECA-2.1, ECA-3.1, ECA-3.2, ECA-3.3, F-0.2, FR-C.1, and FR-C.2.
- c. The CET revised system accuracy has also been incorporated into the Emergency Operating Procedures. CET error above 1000 psig is less than 50°F; between 400 psig and 1000 psig, the CET error is less than 60°F. These accuracies are acceptable for performing the operator actions necessary in the Emergency Response Guidelines. The CET accuracies have been used in the determination of new setpoints and the following have been revised to reflect these new setpoints:
 - E-0, E-1, E-3, ES-0.1, ES-0.3, ES-0.4, ES-1.1, ES-1.2, ES-1.4, ES-3.1, ES-3.2, ES-3.3, ECA-0.0, ECA-0.1, ECA-2.1, ECA-3.1, ECA-3.2, ECA-3.3, FR-P.1, FR-I.3 and F-0.2

6. Additional Reports

No additional reports are expected.