



Duquesne Light

Nuclear Construction Division
Robinson Plaza, Building 2, Suite 210
Pittsburgh, PA 15205

2NRC-5-045
(412) 787-5141
(412) 923-1960
Telecopy (412) 787-2629
March 13, 1985

United States Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Mr. George W. Knighton, Chief
Licensing Branch 3
Office of Nuclear Reactor Regulation

SUBJECT: Beaver Valley Power Station - Unit No. 2
Docket No. 50-412
PSB Electrical Outstanding Issues

REFERENCES: 1) 2NRC-4-150, dated September 20, 1984
2) 2NRC-4-162, dated October 10, 1984

Gentlemen:

This letter forwards responses to the issues listed below which were provided by PSB. Responses were provided in References 1 and 2, and subsequently discussed in a meeting on December 14, 1984, for which no minutes have yet been provided. FSAR changes described in these revised responses are intended to be incorporated upon acceptance by PSB. The following items are attached:

- Attachment 1: Revised response to Outstanding Issue 196 of the Beaver Valley Power Station Unit No. 2 Draft Safety Evaluation Report, Section 8.3.3.1.1 (originally provided in Reference 2).
- Attachment 2: Response to Outstanding Issue of the Beaver Valley Power Station Unit No. 2 Safety Evaluation Report, Section 8.3.3.3.5.
- Attachment 3: Response to Outstanding Issue of the Beaver Valley Power Station Unit No. 2 Safety Evaluation Report, Sections 8.3.3.3.6 and 8.3.3.3.15.
- Attachment 4: Response to Outstanding Issue of the Beaver Valley Power Station Unit No. 2 Safety Evaluation Report, Section 8.3.3.3.14.
- Attachment 5: Response to Outstanding Issue of the Beaver Valley Power Station Unit No. 2 Safety Evaluation Report, Section 8.3.3.3.16.

8503180414 850313
PDR ADOCK 05000412
E PDR

2001
1/1

Attachment 6: Response to Outstanding Issue 199 of the Beaver Valley Power Station Unit No. 2 Draft Safety Evaluation Report, Section 8.3.3.7.2 (originally provided in Reference 1).

DUQUESNE LIGHT COMPANY

By E. J. Woolever
E. J. Woolever
Vice President

GLB/wjs
Attachment

cc: Mr. A. Ungaro, Section Leader (w/a)
Mr. B. K. Singh, Project Manager (w/a)
Mr. G. Walton, NRC Resident Inspector (w/a)
Mr. L. Rubenstein, Assistant Director (w/a)

COMMONWEALTH OF PENNSYLVANIA)
) SS:
COUNTY OF ALLEGHENY)

On this 13th day of March, 1985, before me, a Notary Public in and for said Commonwealth and County, personally appeared E. J. Woolever, who being duly sworn, deposed and said that (1) he is Vice President of Duquesne Light, (2) he is duly authorized to execute and file the foregoing Submittal on behalf of said Company, and (3) the statements set forth in the Submittal are true and correct to the best of his knowledge.

Anita Elaine Reiter
Notary Public

ANITA ELAINE REITER, NOTARY PUBLIC
ROBINSON TOWNSHIP, ALLEGHENY COUNTY
MY COMMISSION EXPIRES OCTOBER 20, 1986

ATTACHMENT 1

Response to Outstanding Issue 196 of the Beaver Valley Power Station Unit No. 2 Draft Safety Evaluation Report

Draft SER Section 8.3.3.1.1: Submerged Electrical Equipment as a Result of a Loss-of-Coolant Accident

It is the staff's concern that following a loss-of-coolant accident, fluid (from the reactor coolant system and from operation of the emergency core cooling systems) may collect in the primary containment and reach a level that may cause certain electrical equipment located inside the containment to become submerged and thereby rendered inoperable. Both safety and nonsafety-related electrical equipment is of concern because their failure may cause electrical faults that would compromise the operability of redundant emergency power sources or the integrity of the containment electrical penetrations. In addition, the safety-related electrical equipment that may be submerged is also of concern if this equipment is required to mitigate the consequences of the accident for both the short-term and long-term emergency core cooling system functions and for containment isolation.

The staff's position, in regard to submerged equipment, is that all electrical equipment must be located above the maximum possible flood level or be qualified for submerged operation, or the lack of qualification must be justified.

By Amendment 3 to the FSAR, the applicant provided a listing of safety class equipment that may become submerged as a result of a LOCA and are not designed and qualified for submergence. In justification of the lack of qualification, the applicant stated that the design of the Class 1E distribution system satisfies the isolation criteria by ensuring that the failure of the submerged equipment will not degrade the Class 1E power source. Clarification of the isolation criteria and how it ensures that Class 1E systems will not be degraded will be pursued with the applicant and the results of the staff review will be reported in a supplement to this report.

Response:

All Class 1E electrical equipment which may become submerged as a result of a LOCA, as listed in the response provided for 430.18, Amendment 3, is electrically tripped by a Class 1E system, disconnecting its Class 1E power source upon a high flood level indication. The Class 1E level transmitters providing the sensing and instrumentation for this high flood level indication will be qualified for submergence. Two Class 1E sensors (orange and purple train-related) will be located below the Class 1E electrical equipment, which may become submerged as a result of a LOCA. Figure 7.4-27 shows a typical system logic for this tripping function. In accordance with plant procedures, calibrations will be performed at a refueling frequency.

ATTACHMENT 2

Response to Outstanding Issue of the
Beaver Valley Power Station Unit No. 2
Safety Evaluation Report

SER Section 8.3.3.3.5: Adequacy of Cable Separation Inside Balance-of-Plant Cabinets

(Text unavailable to DLC.)

Response:

The subject control switchboards and instrument cabinets are located in a protected area and are not subject to external energetic events such as flood, high-energy-pipe rupture, and missiles. Electrically generated fires caused by fault current are not considered to be a hazard because of the use of fire-retardant material and low-energy cables. The 1-inch separation is justified because it will prevent interaction between wire bundles resulting from electrical potentials or heated wire caused by electrical faults. This separation provides sufficient independence between redundant circuits and an acceptable level of protection to Class 1E circuits in accordance with the independence and single-failure requirements of GDC 17.

ATTACHMENT 3

Response to Outstanding Issue of the
Beaver Valley Power Station Unit No. 2
Safety Evaluation Report

SER Section 8.3.3.3.6 and 8.3.3.3.15: Additional Tests and Analyses for Specified Cable Configurations

(Text unavailable to DLC.)

Response:

As agreed at the September 26, 1984, meeting, DLC has provided a detailed description and justification for configurations that were found acceptable on other dockets without testing. This information was provided in letter 2NRC-4-270, dated October 16, 1984. Since that submittal provided justifications and analyses which are consistent with those described as acceptable in other recent SERs, testing or additional justification and analyses are unnecessary for NRR to find these configurations acceptable.

ATTACHMENT 4

Response to Outstanding Issue of the
Beaver Valley Power Station Unit No. 2
Safety Evaluation Report

SER Section 8.3.3.3.14: Routing of Power Circuits in the Cable Spreading Area, Control Room, and Computer Room

(Text unavailable to DLC.)

Response:

In letter 2NRC-4-270, dated October 16, 1984, DLC provided the text of a proposed revision to the BVPS-2 FSAR. The attached change to that revision addresses the reviewer's concern.

ATTACHMENT 5

Response to Outstanding Issue of the
Beaver Valley Power Station Unit No. 2
Safety Evaluation Report

SER Section 8.3.3.3.16: Frequency of Cable Identification Markings

(Text unavailable to DLC.)

Response:

A 15-foot maximum marking distance is sufficient to facilitate visual verification that the cable installation is in conformance with separation criteria.

ATTACHMENT 6

Response to Outstanding Issue 199 of the Beaver Valley Power Station Unit No. 2 Draft Safety Evaluation Report

Draft SER Section 8.3.3.7.2: Compliance with RG 1.63

Section 8.3.1.2.1 of the FSAR indicates that primary and backup containment electrical penetration protection is provided only where the available fault-current exceeds the current-carrying capabilities of penetration conductors. This design for containment electrical penetration does not meet the guidelines of position 1 of Regulatory Guide 1.63. Position 1 requires primary and backup protection where maximum available fault-current exceeds the current-carrying capability of the penetration versus capability of the conductors.

By Amendment 3 to the FSAR, the applicant indicated that the Beaver Valley design provides primary and backup protection as required by RG 1.63 and that the following additional information would be provided by March 1984:

- a. fault-current versus time curve for each representative type cable conductor which penetrates primary containment
- b. test report which verify the capability of penetration to withstand the total range of time versus fault current for worst case environmental conditions.

Revision to the FSAR to indicate compliance to RG 1.63 without exception and review of the above additional information will be pursued with the applicant. The results of the staff review will be reported in a supplement to this report.

Response:

The following additional information was provided in letter 2NRC-4-150, dated September 20, 1984.

- a. fault current versus time curves for each representative type cable conductor which penetrates primary containment
- b. test report excerpts which verify the capability of penetrations to withstand the total range of time versus fault current for worst case environmental conditions

GDC 51 is met by providing penetration assemblies which are designed to withstand, without loss of mechanical integrity, the maximum short-circuit current versus time conditions that could occur given single random failures of circuit overload protection devices.