



Duquesne Light

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October 26, 1984

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
Mechanical Engineering Branch Question 210.31 Response

Gentlemen:

As discussed in the October 2, 1984, meeting with the Mechanical Engineering Branch, this letter forwards a revised, more-detailed response to FSAR Question 210.31 (Draft SER Open Item 40).

Upon completion of your review, please immediately inform us of the status of this response.

DUQUESNE LIGHT COMPANY

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

JJS/wjs
Attachment

cc: Ms. M. Ley, Project Manager (w/a)

SUBSCRIBED AND SWORN TO BEFORE ME THIS
26th DAY OF October, 1984.

Anita Elaine Reiter
Notary Public

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

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COMMONWEALTH OF PENNSYLVANIA)
) SS:
COUNTY OF ALLEGHENY)

On this 26th day of October, 1984, 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

Question 210.31 (Section 3.9.3)

The staff finds that there is insufficient information describing the design of safety-related HVAC ductwork and supports. Provide the design basis used for qualifying the HVAC ductwork and support structural integrity.

Response:

Design of safety-related duct follows guidance provided by SMACNA (Sheet Metal and Air Conditioning Contractors National Association, Inc.), and Industrial Duct Construction Standards, for allowable combination of gage, stiffness, joints, and seams.

Seismic design is facilitated by providing supports and support spans to assure nonresonant response as defined by the applicable building Amplified Response Spectra (ARS). Each support typically provides at least transverse restraint (2 orthogonal directions). Axial restraint is provided at least at every third support. The analytical methods used and the rigid range response of duct/duct support systems are confirmed by on-site testing results (Reference 1). Rigid range acceleration for this plant does not exceed 0.64 g. Testing of maximum duct spans included the application of 0.64 g equivalent seismic loading in concert with 1.0 g for deadload. Therefore, duct adequacy for the full design seismic plus deadweight loading was verified.

Duct system fundamental frequencies are calculated to assure rigid range response as noted above. The design of seismically qualified duct supports is based upon the appropriate acceleration selected from the non-resonant range of the applicable building ARS, with consideration of duct spans, weight, duct properties, and adjacent supports. An equivalent static load method of analysis is used with the applicable response in each of three orthogonal directions combined by SRSS. The resulting loads are considered to occur simultaneously with deadload. Support frame design was based upon satisfaction of AISC (7th edition) limits.

Reference: (1) SWEC Report EMTR-61b. Evaluation of Field Testing of Selected HVAC Ducts at Beaver Valley Nuclear Power Station - Unit 2, July 1984.