

MARCH 13 1979

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Docket Nos. 50-334

Mr. C. N. Dunn, Vice President
 Operations Division
 Duquesne Light Company
 435 Sixth Avenue
 Pittsburgh, Pennsylvania 15219

Dear Mr. Dunn

The Commission today has issued the enclosed Show Cause Order for Beaver Valley Power Station Unit No. 1. The Show Cause Order requires that Unit 1 remain shutdown until further order from the Commission.

This Order is issued because of potential piping deficiencies in safety related systems and requires you to show cause why reanalyses and any necessary modifications to facility piping systems indicated by such reanalyses should not be performed. The basis for this action is set forth in the Order.

Sincerely,

Original Signed By,

Harold R. Denton Director
 Office of Nuclear Reactor Regulation

Enclosure
Orders

cc w/encl.
See next page

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*SEE PREVIOUS YELLOW FOR CONCURRENCES

OFFICE	DOR:ORB1	DOR:AD:S&P	OELD	NRR		
SURNAME	ASchwencer:lb	RHVollmer	JScinto	HRDenton		
DATE	03/13/79	03/13/79	03/13/79	03/13/79		

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Docket No. 50-334

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 Operations Division
 Duquesne Light Company
 435 Sixth Avenue
 Pittsburgh, Pennsylvania 15219

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The Commission today has issued the enclosed Show Cause Order for Beaver Valley Power Station Unit No. 1. The Show Cause Order requires that Unit 1 remain shutdown until further order from the Commission.

This Order is issued because of potential piping deficiencies in safety related systems and requires you to perform analyses and/or modifications prior to getting approval to restart the plant. The basis for this action is set forth in the Order.

Sincerely,

Harold R. Denton, Director
 Office of Nuclear Reactor Regulation

Enclosure:
 Order

cc w/encl:
 See next page

OFFICE	DOR: ORB#1	DOR: S&P	OELD	NRR	
SURNAME	ASchwencer:lh	RHVo1lmer		HRDenton	
DATE	3/13/79	3/13/79	3/13/79	3/ /79	

Handwritten initials and notes:
 Order OK
 per denton



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

March 13, 1979

Docket Nos. 50-334

Mr. C. N. Dunn, Vice President
Operations Division
Duquesne Light Company
435 Sixth Avenue
Pittsburgh, Pennsylvania 15219

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Sincerely,

A handwritten signature in black ink, appearing to read "Harold R. Denton".

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Enclosure:
Orders

cc w/encl:
See next page

March 13, 1979

cc

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Charleston, West Virginia 25305

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Committee of State Officials on
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Morgantown, West Virginia 26505

Mr. Joseph H. Mills, Acting Commissioner
State of West Virginia Department of
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Pittsburgh, Pennsylvania 15219

B. F. Jones Memorial Library
663 Franklin Avenue
Aliquippa, Pennsylvania 15001

Duquesne Light Company

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March 13, 1979

CC

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State Department of Health
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Charleston, West Virginia 25305

Director, Technical Assessment Division
Office of Radiation Programs (AW-459)
U. S. Environmental Protection Agency
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U. S. Environmental Protection
Agency
Region III Office
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Philadelphia, Pennsylvania 19106

Mr. James A. Werling
Plant Superintendent
Beaver Valley Power Station
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Governor's Office of State Planning
and Development
ATTN: Coordinator, Pennsylvania
State Clearinghouse
P. O. Box 1323
Harrisburg, Pennsylvania 17120

In the course of a meeting on March 8, 1979 to discuss these matters, the Licensee informed the NRC staff that the difference in predicted piping stresses between the two computer codes is attributable to the fact that the piping analysis code specified in the application for an operating license uses an algebraic summation of the loads predicted separately by the computer code for both the horizontal component and for the vertical component of seismic events. This incorrect treatment of such loads was not recognized at that time. Such loads should not be algebraically added (with predicted loads in the negative direction offsetting predicted loads in the positive direction) unless far more complex time-history analyses are performed. Rather, to properly account for the effects of earthquakes, as required by General Design Criterion 2 for systems important to safety, such loads should be combined absolutely or, as is the case in newer codes, using techniques such as the square root of the sum of the squares. This conforms to current industry practice.

The inappropriate analytical treatment of load combinations discussed above becomes significant for piping runs in which the horizontal seismic component can have both horizontal and vertical components on piping systems, and the vertical seismic component also has both horizontal and vertical components. It is in these runs that the predicted earthquake loads may differ significantly.

Although the greatest differences in predicted loads would tend to be limited to localized stresses in pipe supports and restraints or in weld

attachments to pipes, there could be a substantial number of areas of high stress in piping as well as a number of areas in which there is potential for damage to adjacent restraints or supports, which could have significant adverse effects on the ability of the piping system to withstand seismic events.

In order to ascertain the specific systems that are potentially affected by this error, members of the NRC staff on March 10, 11 and 12 accompanied the Licensee's representatives to the offices of Stone and Webster, the architect-engineer of the facility to review detailed designs and computations for some of the piping systems of principal potential concern. Concurrently, on March 9, 1979 the Licensee suspended power operation of the facility. Based on this more detailed review, the NRC staff has concluded that until full reanalysis of all potentially affected piping systems important to safety has been completed with a piping analysis computer code which does not contain the algebraic summation error, the potential for serious adverse effects in the event of an earthquake is sufficiently widespread that the basic defense in depth provided by redundant safety systems may be compromised.

In view of the safety significance of this matter as discussed above, the Director of the Office of Nuclear Reactor Regulation has concluded that the public health and safety requires that the present suspension of operation of the facility should be continued: (1) until such time as the piping systems for all affected safety systems have been reanalyzed

for earthquake events to demonstrate conformance with General Design Criterion 2 using a piping analysis computer code which does not contain the error discussed above, and (2) if such reanalysis indicates that there are components which deviate from applicable ASME Code requirements, until such deviations are rectified.

III.

Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, and the Commission's Rules and Regulations in 10 CFR Parts 2 and 50, IT IS HEREBY ORDERED THAT the Licensee show cause, in the manner hereinafter provided,

- (1) Why the Licensee should not reanalyze the facility piping systems for seismic loads on all potentially affected safety systems using an appropriate piping analysis computer code which does not combine loads algebraically;
- (2) Why the Licensee should not make any modifications to the facility piping systems indicated by such reanalysis to be necessary; and
- (3) Why facility operation should not be suspended pending such reanalysis and completion of any required modifications.

In view of the importance to safety of this matter, as described herein, the Director of the Office of Nuclear Reactor Regulation has determined that the public health and safety or interest require that the action be effective immediately, pending further Order of the Commission.

Accordingly, within 48 hours of the receipt of this Order, the facility shall be placed in cold shutdown condition, and shall remain in such mode until further Order of the Commission.

The Licensee may, within twenty days of the date of this Order, file a written answer to this Order under oath or affirmation. Within the same time, the Licensee or any interested person may request a hearing. If a hearing is requested, the Commission will issue an Order designating the time and place for hearing. Upon failure of the Licensee to file an answer within the time specified, the Director, Office of Nuclear Reactor Regulation will, without further notice, issue an order suspending further activities under Operating License DPR-66.

In the event a hearing is requested, the issues to be considered at such hearing shall be:

Whether operation under Facility License No. DPR-66 should be suspended until (1) the piping systems for all affected safety systems are reanalyzed for earthquake events using an appropriate piping analysis computer code which does not

combine seismic loads algebraically, and until (2) any modifications required to restore the system to conformance with applicable ASME Code requirements are completed.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script, appearing to read "Harold R. Denton".

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland
this 13th day of March, 1979.