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October 10, 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  
Alternate Pipe Rupture Protection Program

Gentlemen:

Enclosed herewith please find a copy of the "WHIPJET" program proposed by Duquesne Light Company (DLC) which provides an improved means for determining the necessity to install mechanical devices to protect equipment and structures from the effects of pipe breaks. This document provides a more definitive programmatic technical description, including acceptance criteria, than the general program description which was submitted by letter 2NRC-5-128 dated September 6, 1985.

Initial regulatory consideration of pipe rupture (1974) arbitrarily assumed instantaneous full flow double ended pipe breaks.

During the last 10 years, the engineering discipline of fracture mechanics has improved substantially. It is widely accepted in the engineering community that fracture mechanics will accurately predict the behavior of flaws and cracks in piping when applied correctly.

DLC proposes to provide pipe break protection at BVPS-2 using an alternate improved method. It is proposed to implement a comprehensive engineering program (WHIPJET) with main features as follows:

- a. Using guidance from NUREG-1061, Vol. 3, show that conditions for applying fracture mechanics to Balance-of-Plant (BOP) postulated pipe breaks are satisfied.
- b. Analyze BOP postulated breaks to show that even large flaws will remain stable and that leakage from such flaws can be detected before the pipe will break (LBB).
- c. If for any systems, conditions for applying fracture mechanics are not met or LBB cannot be proven, then the conventional approach using whip restraints and jet shields will be used.

As discussed in the full description of the WHIPJET proposal, it is clear that the proposed approach will be a net safety benefit. DLC would

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like the NRC to accept the general approach proposed herein subject to later detailed review and approval of the results of the tests and analysis performed as part of WHIPJET.

If the overall philosophy is accepted, the tests and analyses of systems would provide the improved means of pipe break protection alluded to in the first paragraph above for most of the postulated breaks.

There would be some breaks as discussed in (c) above for which the conventional approach would be used. Whip restraints and jet shields would be installed for these systems.

A schedular implementation program is hereby requested if it is deemed necessary to permit BVPS-2 to load fuel prior to installation of any pipe whip restraints determined necessary by this program.

The following overall schedule is proposed:

- |  |   |
|--|---|
| o DLC to perform the engineering tests and analyses of WHIPJET   | COMPLETE<br>DEC 86  |
| o NRC evaluate results of WHIPJET engineering tests and analyses   | COMPLETE PRIOR TO ISSUANCE OF<br>LICENSE FOR FULL POWER OPERATION |
| o DLC install any whip restraints determined to be required as a result of WHIPJET analysis and/or NRC evaluation of WHIPJET results | DURING SCHEDULED REFUELING<br>OUTAGES                             |

The program has been discussed with members of the NRC staff. In addition, it was presented to a combined meeting of the subcommittees on Structural Engineering/Seismic Design and Piping/Metal Components, and ACRS consultants on September 24, 1985. The proposed program received uniformly favorable comment from the ACRS members in attendance.

In addition, the program has been discussed with members of the NRC legal staff. The program has been revised to include suggestions made by the legal staff, who have stated that there is no conceptual legal difficulty with the proposed approach including any potential need for a schedular implementation program.

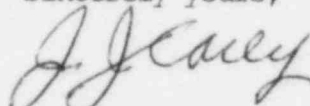
Your early review of our proposed approach will be greatly appreciated.

If upon completion of your review you would like to discuss any program details, we will be available at your convenience.

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Mr. George W. Knighton, Chief  
Alternate Pipe Rupture Protection Program  
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Please note that the enclosed document includes the request for withholding from public disclosure in accordance with 10CFR 2.790. This application for withholding is being made by Duquesne Light Company on the behalf of Stone & Webster Engineering Corporation and Robert L. Cloud Associates (affidavits attached).

Sincerely yours,



J. J. Carey  
Vice President

JJS/uc

cc: Mr. R. Bosnak  
Mr. H. R. Denton  
Mr. J. P. Knight  
Mr. B. K. Singh  
Mr. G. Walton

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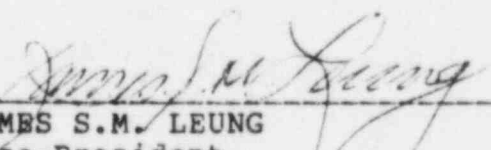
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October 7, 1985

P104-008

Beaver Valley 2 Project  
WHIPJET Program  
U.S. Nuclear Regulatory Commission  
Bethesda, MD

This affidavit is submitted by Robert L. Cloud and Associates, Inc. (RLCA), for the WHIPJET program report dated October 2, 1985. RLCA is a Duquesne Light Company subcontractor for this project. The contents of the WHIPJET program are proprietary containing confidential technical subject matter. Public disclosure of the information contained in the WHIPJET report would cause substantial financial harm to RLCA because numerous man-hours spent in research and data gathering would be lost.

  
JAMES S.M. LEUNG  
Vice-President  
Robert L. Cloud Associates, Inc.

STATE OF CALIFORNIA

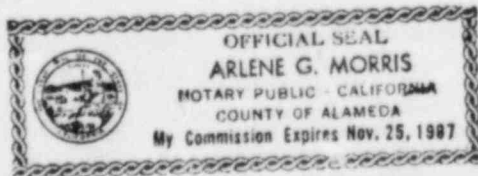
COUNTY OF ALAMEDA

On this 7th day of October, in the year 1985

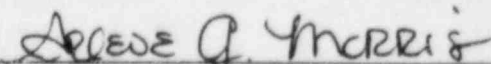
ss. ARLENE G. MORRIS, before me,  
duly commissioned and sworn, personally appeared  
JAMES S.M. LEUNG

personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to this instrument, and acknowledged that he executed it.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal in the State of California, County of Alameda on the date set forth above in this certificate.



This document is only a general form which may be proper for use in simple transactions and in no way acts, or is intended to act, as a substitute for the advice of an attorney. The printer does not make any warranty, either express or implied as to the legal validity of any provision or the suitability of these forms in any specific transaction.

  
ARLENE G. MORRIS Notary Public, State of California

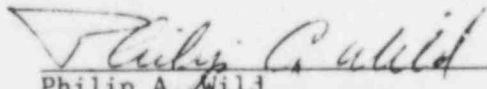
My commission expires

AFFIDAVIT

I, Philip A. Wild, being duly sworn, depose and say:

1. I am a Senior Vice President of Stone & Webster Engineering Corporation (SWEC) and have the authority to review and protect the confidential commercial information sought to be withheld.
2. For the reasons listed below, the BVPS-2 WHIPJET PROGRAM contains information considered by SWEC to be confidential information containing trade secrets of a type held in confidence by SWEC and not disclosed to the public.
  - a. The subject material consists of a program which is an alternative to the method for postulating and evaluating pipe ruptures as set forth in SRP 3.6.2. This program is a preventative program as opposed to a mitigative program.
  - b. SWEC is in the business of designing and constructing nuclear power plants. This business is competitive and firms that engage in it compete on the basis of the nature of services that they offer to clients. The subject material is one such service.
  - c. The subject material provides a method for consideration of postulated pipe ruptures and could be used by competitors in their designs.
  - d. The subject material was developed at considerable expense to SWEC, is of substantial value to SWEC in the conduct of its business, and a competitor would derive an unfair advantage in obtaining the proprietary information contained therein. Thus, the unrestricted disclosure of this material could have an adverse commercial impact on SWEC.
  - e. It is, accordingly, the customary practice of SWEC and its competitors to treat such material as confidential commercial information.
  - f. To the best of my knowledge and belief, the identified materials are not available from any public source and have not been made available to third parties, except in confidence.

DATED: October 9, 1985

  
Philip A. Wild  
Senior Vice President  
Stone & Webster Engineering Corporation

## COMMONWEALTH OF MASSACHUSETTS

Suffolk, ss.

October 9, 1985

Subscribed and sworn to before me on the 9th day of October, 1985.

Robert M. Libulkin  
Notary Public

My Commission expires: MARCH 5, 1987