



# Duquesne Light

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June 22, 1984

Mr. Harold R. Denton  
Office of Nuclear Reactor Regulation  
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  
FSAR Separate Submittal for Environmental Qualification Program

Gentlemen:

In accordance with the Duquesne Light Company (DLC) response provided in FSAR Amendment 4 (2NRC-3-096, dated December 2, 1983), attached are six (6) copies of the FSAR separate submittal containing information on environmental qualification of BVPS-2 equipment. This separate submittal addresses NRC Equipment Qualification Branch concerns identified in FSAR Questions 270.2 and 270.3 and the draft SER. The FSAR separate submittal for the environmental qualification is divided into two parts: 1) mechanical safety-related equipment (Attachment 1), and 2) electrical Class 1E safety-related equipment (Attachment 2).

DLC plans to provide a future update of this submittal to the NRC in support of environmental qualification audit activities. If there are any questions in this regard, please contact Mr. C. L. Hill, Regulatory Affairs Department, at (412) 787-5141, extension 145.

DUQUESNE LIGHT COMPANY

SUBSCRIBED AND SWORN TO BEFORE ME THIS

22<sup>nd</sup> DAY OF June, 1984.

*Elva G. Lesondak*  
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ELVA G. LESONDAK, NOTARY PUBLIC

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

KEW/wjs

Attachments

cc: Ms. M. Ley, Project Manager (w/o attachments)  
Mr. E. A. Licitra, Project Manager (w/o attachments)  
Mr. G. Walton, NRC Resident Inspector (w/attachments)

By

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

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*Dist  
Per M. Ley*

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*Encl*


*TO: H. Walker EQB  
Marilyn Ley  
POR  
LPOR*

*Reg Files  
NTIS  
NSIC*

*Resident Inspector (Advanced)*

COMMONWEALTH OF PENNSYLVANIA )  
 ) SS:  
COUNTY OF ALLEGHENY )

On this 22<sup>nd</sup> day of June, 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.

  
Notary Public

ELVA G. LESONDAK, NOTARY PUBLIC  
ROBINSON TOWNSHIP, ALLEGHENY COUNTY  
MY COMMISSION EXPIRES OCTOBER 20, 1986

## ATTACHMENT 1

This summary presents the methodology used in the performance of the Mechanical Equipment Qualification (MEQ) Program, for BVPS Unit 2.

The equipment within the scope of this program is active safety-related mechanical equipment located in potentially harsh accident environments which could be required to mitigate either a Loss-Of-Coolant-Accident (LOCA), Main Steam Line Break (MSLB), or High Energy Line Break (HELB) outside containment.

Active mechanical equipment is defined as equipment which must perform a mechanical motion to accomplish its safety function.

The qualification process will define the non-metallic subcomponents of each item of equipment within the defined scope and evaluate their material capabilities.

### Master List Development

The identification of that equipment encompassed within the scope of the program is performed in 3 steps:

1. Identification of the safety-related systems used in the electrical equipment qualification program.
2. Identification of active safety-related mechanical equipment contained in safety-related systems which perform an accident mitigating function and are located in a harsh environment.
3. Completion of the Master List, which includes identification of manufacturer, model, plant location, and applicable environments for each piece of equipment. The environmental parameters developed for use in the electrical program will be used in this program.

### Qualification Procedure

The evaluation of the mechanical equipment within the scope of the program is documented in the Mechanical Equipment Qualification (MEQ) Files. These files present a clear, auditable format for all data and analyses utilized to demonstrate that the subject equipment is capable of withstanding postulated accident conditions. These files also stipulate any special limitations, such as scheduled maintenance or refurbishment, required to maintain environmental qualification.

The scope of each MEQ File is a group of equipment which has been determined to be similar because they were procured under the same specification, made by the same manufacturer, and are of the same basic design and construction.

### Selection of Environmental Parameters

Each MEQ File may address numerous pieces of equipment which can be located in different plant areas. Therefore, in order to address this equipment as a group, all environmental profiles and radiation zones are evaluated and the most severe environment chosen. Initially, each set of equipment is evaluated to the worst case environment independent of separate locations. If the equipment is found to not be capable of withstanding these worst case conditions, then each piece of equipment is evaluated separately to its specific environmental conditions. Equipment located in environments enveloped by the qualification values would be considered "Qualified."

### Qualification Evaluation

Each piece of equipment entered into the BVPS Unit 2 MEQ Program is then evaluated to determine if it is capable of withstanding postulated accident conditions. In order to perform this evaluation, the design specifications and non-metallic materials of construction for each piece of equipment is determined from vendor drawings, instruction manuals, and direct communications with the manufacturer. This data is analyzed to determine if the equipment met the specific acceptance criteria discussed below.

#### A. Operability

All equipment within the scope of this program will be conservatively qualified for the postulated post-accident duration of 411.5 days.

#### B. Temperature

Qualification for accident temperature conditions is obtained by comparison of the peak postulated accident temperature with equipment design specifications and the thermal capabilities of non-metallic components.

#### C. Pressure

Qualification for accident pressure conditions is obtained by comparisons of the peak postulated accident pressure to the equipment design specifications, vendor drawings, or vendor test.

#### D. Humidity

Qualification for humidity conditions is evaluated by comparing postulated accident conditions to equipment design specifications. Equipment which carry fluid or air are assumed to be not sensitive to 100% relative humidity, as they are sealed assemblies by design.

E. Radiation

Radiation qualification is obtained by comparing the 40-year-normal-plus-1-year accident dose to the radiation capabilities of all non-metallic components contained in the device.

F. Chemical Spray

Qualification for chemical spray conditions is evaluated on a case-by-case basis dependent on the equipment design, location and associated environments.

For any component part that is initially not qualified to the above criteria, any or all of the following methods may be used to demonstrate that equipment will perform its safety functions as required:

- o Evaluation of time dependent environmental profiles with respect to actual versus a 401.5 day operating time.
- o Demonstrate 401.5 day accident operability for a life of less than 40 years.
- o If safety function is required for only one type of accident (i.e., HELB vs. LOCA), demonstrate operability qualification for the accident and show that equipment failure during remaining accident(s) has no adverse effects on plant operation.
- o Demonstrate that the postulated failure of the subcomponent part will not effect the equipment with respect to the performance of its required safety function.

If a component part life expectancy is found to be less than 40 years plus the postulated accident operability time, then this information will be incorporated into the BVPS Unit No. 2 surveillance and maintenance program to ensure that the installed life of equipment or subcomponent parts is not exceeded.