Duquesne Light
Nuclear Construction Division
Robinson Plaza, Building 2, Suite 210
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May 30, 1984

United States Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Mr. Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

SUBJECT: Beaver Valley Power Station - Unit No. 2
Docket No. 50-412
Identification of Backfit Requirement Number 1

Gentlemen:

In a letter dated August 31, 1984, Duquesne Light Company (DLC) received questions (Attachments 1 and 2) from the NRR-Hydrologic Engineering Branch concerning the probable maximum precipitation (PMP) and its effect on safety-related structures and components at Beaver Valley Power Station Unit 2 (BVPS-2). In reviewing these questions, DLC noted that the staff had changed their review criteria for PMP from the Hydrometeorology Report (HMR) No. 33 and Corps of Engineers EM 1110-2-1411 to HMR's Nos. 51 and 52.

In a letter to you (Attachment 3) DLC identified this NRC request as beyond the SRP criteria applicable to BVPS-2. The Draft SER Section 2.4.2.3 (Attachment 4) identified these NRR requests as open items. A meeting was held with your staff on March 21, 1984, to discuss DLC's concerns. At this meeting the staff concluded that BVPS-2 will be required to use HMR Nos. 51 and 52 for determining PMP. In a subsequent letter from the NRC dated April 11, 1984, (Attachment 5) DLC was informed that the use of the new HMR's will be required. The controls of 10CFR50.109, GNLR 84-08, and NRC Manual Chapter 0514 identify this requirement as a backfit.

DLC requests that the proposed requirement be submitted to NRC management for approval, in accordance with the Office of Nuclear Reactor Regulation (NRR) procedure for management of plant specific backfitting, prior to transmittal as a licensing requirement.

DUQUESNE LIGHT COMPANY

By _____
T. J. Woolever
Vice President

RW/wjs
Attachments

cc: Mr. H. R. Denton (w/attachments)
Mr. G. W. Knighton, Chief (w/attachments)
Ms. M. Ley, Project Manager (w/attachments)
Mr. M. Licitra, Project Manager (w/attachments)
Mr. G. Walton, NRC Resident Inspector (w/attachments)

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NRC-Letter: August 31, 1983

Question 240.1 (Section 2.4.2)

In determining the local PMF for Peggs Run, you need a rainfall intensity of 9.3 inch/hour. The staff does not agree that this approach is correct since 9.3 inches is the total PMP that you determined for a 1-hour period. The PMP must be broken down to appropriate time increments suitable for the drainage area and times of concentration that exist at the site. Document the adequacy of your design by using a rainfall intensity corresponding to the time of concentration for Peggs Run. Provide your estimate of time of concentration together with an explanation of how it was calculated. In addition, you should use the latest publications available to determine PMP values (refer to Question 240.8).

Response:

The response to this question will be provided at a later date.

NRC Letter: August 31, 1983

Question 240.8 (Section 2.4.2)

In determining the magnitude and temporal distribution of PMP, you used Hydrometeorological Report (HMR) No. 33, "Seasonal Variation of the Probable Maximum Precipitation East of the 105th Meridian for Areas of 10 to 100 Square Miles and Durations of 6, 12, 24, and 48 hours," 1956; and the Corps of Engineers' Civil Engineering Bulletin No. 52-8, "Standard Project Flood Determinations", 1965 (Revised).

The National Weather Service has published two newer reports that should be used to determine PMP values and distribution. The first of these reports is HMR No. 51, "Probable Maximum Precipitation Estimates, Unites States East of the 105th Meridian", June 1978. The second report is HMR No. 52 "Application of Probable Maximum Precipitation Estimates - Unites States East of the 105th Meridian", August 1982. Both of these reports should be used in your evaluation of site drainage.

Response:

The response to this question will be provided at a later date.

Duquesne Light

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Robinson Plaza, Building 2, Suite 210
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2NRC-3-088
(412) 787-5141
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November 15, 1983

United States Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Mr. Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

SUBJECT: Beaver Valley Power Station - Unit No. 2
Docket No. 50-412
Final Safety Analysis Report - Review Questions

Gentlemen:

As discussed in Chapter 1 of the Beaver Valley Power Station Unit 2 Final Safety Analysis Report (FSAR), the design of the station was reviewed against the Federal regulations and the NRC Standard Review Plan (SRP), NUREG-0800, dated July 1981. A recent request for additional information on the Beaver Valley docket revises the SRP criteria without following NRR procedures for such revisions. Such actions by the staff are contrary to NRR policy and have a destablizing effect on the licensing process.

On August 31, Duquesne Light Company (DLC) received several questions from the NRR Hydrologic Engineering Branch concerning the probable maximum precipitation and its effect on safety-related structures and components at Beaver Valley Unit 2. In reviewing these questions, we noted that the staff had changed their reveiw criteria for probable maximum precipitation (PMP) from the Hydrometeorological Report (HMR) No. 33 and Corps of Engineers EM 1110-2-1411 to HMR's Nos. 51 and 52 dated June 1978 and August 1982, respectively.

It is our feeling that such a change to the review criteria, especially at this stage of the Beaver Valley Unit 2 review, is not in accordance with NRR policy as outlined in NRR Office Letter No. 2, Revision 2, April 28, 1982. As noted on page 2 of this memorandum, "Staff reviewers should not decrease or go beyond the scope and requirements of any specific SRP section".

In accordance with 10CFR50.34(g), DLC submitted Section 1.8 of the FSAR which evaluated Beaver Valley Unit 2 against the SRP (NUREG-0800, July 1981) in effect six months prior to our docket date of May 18, 1983.

Therefore, it is requested that questions 240.01 and 240.08 be rescinded and that the Beaver Valley site drainage plan be reviewed in accordance with NUREG-0800, July 1981.

DUQUEUESNE LIGHT COMPANY

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

ETE/wjs

cc: Mr. G. Knighton, Chief Licensing Branch No. 3
Ms. L. Lazo, Project Manager
Mr. G. Walton, NRC Resident Inspector

~~The staff has reviewed the material presented by the applicant in accordance with procedures in SRP 2.4.2. Based on this review, the staff concludes that there are no other credible sources of potential flooding of the plant site.~~

2.4.2.3 Effects of Intense Local Precipitation

Site drainage includes hillside drainage to the south of the plant and Peggs Run that parallels the highway road fill just east of the plant between the highway and the cooling tower area. To prevent flooding from hillside drainage, the plant has a storm drainage system which is designed for a rainfall intensity of 4 inches per hour. This is less than the probable maximum precipitation (PMP) so during a PMP event, some water could pond on the site.

PMP is the estimated depth of precipitation (rainfall) for which there is virtually no risk of exceeding. The PMP values used by the applicant to estimate the depth of local flooding, were determined from Hydrometeorological Report 33 (U.S. Weather Bureau 1956) and Engineering Manual, EM111021411 (U.S. Army Corps of Engineers 1952). These rainfall values were as follows:

Duration (hours)	PMP (inches)
0.25	4.3
1	9.3
2	13.0
3	16.5
6	24.6
24	31.3

Using these PMP values, the applicant determined that maximum flood levels would remain 0.13 feet, 0.10 feet and 35.6 feet below the lowest access openings to the control building, the radwaste building, and the reactor building, respectively. It is not clear to the staff if these are the only safety-related buildings that could potentially be affected by flooding; therefore, a question has been submitted to the applicant and the staff is awaiting a response.

The staff has reviewed the information provided by the applicant in accordance with procedures described in SRP 2.4.2 and 2.4.3. The staff used Hydrometeorological Reports 51 and 52 (U.S. National Weather Service, 1978 and 1982) in its PMP determinations. These reports update and supersede Hydrometeorological Report 33 and EM 111021411 which were used by the applicant. The staff concludes that the PMP amounts determined by the applicant are not conservative. In addition, the applicant has not provided sufficient information to support its conclusion that local floods will not enter safety-related buildings. The staff has submitted questions to the applicant and will complete its review pending responses by the applicant. The staff cannot conclude at this time that the plant meets the requirements of GDC 2 with respect to flooding from local intense precipitation.

Peggs Run is constricted in a deeply incised channel between the highway embankment and the cooling tower area at elevations as low as about 670 feet above msl. Construction of the plant required that a portion of Peggs Run be enclosed in a 15-foot diameter culvert so that the plant fill area could be

extended across the Run. Location of the culvert is shown on Figure 2.2. The culvert empties into an open channel before entering the Ohio River. In analyzing the flood effects of a PMP event occurring over the Peggs Run drainage area, the applicant assumed that the 15-foot culvert was blocked. The applicant concluded that water levels in the vicinity of safety-related structures, due to flooding from Peggs Run, would be below the minimum station grade elevation of 730 feet-4 inches msl.

The staff has reviewed the material presented in the FSAR and concludes that the applicant has not provided sufficient information to support its conclusion that flooding from Peggs Run will not affect safety-related buildings. The staff will complete its review following receipt, from the applicant, of responses to staff questions concerning flooding on Peggs Run.

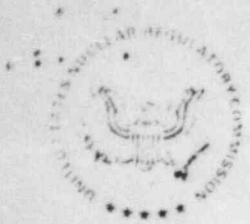
The effects of local intense precipitation on roofs of safety-related buildings, has not been addressed in the material provided by the applicant. The staff will thus require that the applicant demonstrate and provide the basis for the ability of safety-related structures to withstand the accumulation of the PMP in the event that roof drains are blocked. All safety-related structures having roofs with parapets should be identified and the heights of parapets should be given. In addition, the criteria for the size, number and location of scuppers in those parapets should be provided. HMR 51 and HMR 52 should be used in this determination.

2.4.3 Probable Maximum Flood on Streams and Rivers

The probable maximum flood (PMF) is defined as the hypothetical precipitation-induced flood that is considered to be the most severe reasonably possible.

A PMF estimate for the Ohio River was developed by the U.S. Army Corps of Engineers, Pittsburgh District (1970). This PMF was reviewed by the staff during the CP stage and again during the Unit 1 OL review. The staff concluded that the PMF as developed by the Corps of Engineers was acceptable. The PMF was estimated to produce a peak discharge of 1,500,000 cfs and a maximum still water level of 730 feet msl. The finished station grade elevation varies from 730 feet-4 inches msl to 735 feet msl except along the river where the intake structure is located. In this area, the grade elevation is about 675 feet msl. The applicant states that entrances to the reactor building, the control building and the radwaste building are located above minimum local plant grade (730 feet 4 inches msl); the lowest being at an elevation of 730 feet-8 inches. The intake structure which is located at elevation 675 ft msl is equipped with flood doors. As discussed in Section 2.4.2.3, it is not clear to the staff if these are the only safety-related structures that potentially could be affected by flooding; therefore, the staff has submitted a question to the applicant and is awaiting a response.

Although the PMF level at elevation 730 feet msl is below entrances to safety-related structures identified by the applicant, winds blowing across the water may generate waves which could runup against the intake structure which is located close to the river. The applicant determined that coincident windwave activity could result in 5-foot high waves that would runup about 6.7 feet above the still water level of 730 feet msl at the intake structure. In the analysis of the required flood protection for the additional windwave increment, the applicant determined that the wave action would not exceed the structural design



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

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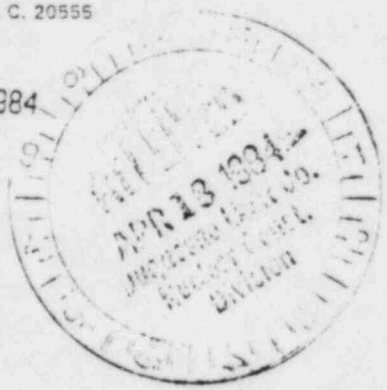

Docket No.: 50-412

Mr. Earl J. Woolever, Vice President
Nuclear Construction Division
Duquesne Light Company
Robinson Plaza No. 2, Suite 210
PA Route 60
Pittsburgh, PA 15205

Dear Mr. Woolever:

Subject: Beaver Valley 2 - Site Drainage Plan

The staff has reviewed your letter of November 15, 1983, in which you requested that questions 240.01 and 240.08, dealing with local flooding, be rescinded and that the Beaver Valley-2 site drainage plan be reviewed in accordance with NRC Standard Review Plan (SRP), NUREG-0800. Your request suggests that the two questions reflect an inappropriate change of our criteria with respect to evaluating flooding effects of local intense precipitation. We have concluded that questions 240.01 and 240.08 should not be rescinded, are in general conformance with the SRP, and reflect a valid safety concern.

As discussed with members of your staff at a meeting held on March 21, 1984, the staff's review procedures for evaluating flood levels have been and continue to be based on a Probable Maximum Precipitation (PMP) event. In our independent assessment of the Beaver Valley-2 site, we used current Corp of Engineers and National Weather Service Methodology (Hydrometeorology Report Numbers 51 and 52) to determine the PMP depth. The analytical methods used by the staff are in accordance with generally accepted hydrological principals and procedures. Consideration of improvements in calculational methods is specifically addressed in NUREG-0800, Section 2.4.2 under "Review Procedures." NUREG-0800 further provides for considerable flexibility in resolving potential flooding problems, recognizing that at the OL stage the range of solutions may be limited by the status of plant construction.

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Estimates of potentially excessive site water levels, based on PMP, constitute a potential safety problem that must be addressed. Questions 240.01 and 240.08 are necessary to further quantify this analysis, and should therefore be responded to by your staff.

We appreciate meeting with your staff on March 21, 1984, in which the technical aspects of this issue were discussed.

Sincerely,

Thomas M. Novak, Assistant Director
for Licensing
Division of Licensing

cc: See next page