NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/300 ERIE BOULEVARD WEST, SYRACUSE, N.Y. 13202/TELEPHONE (315) 474-1511

October 3, 1984
(NMP2L 0184)

Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Schwencer:

Re: Nine Mile Point Unit 2
Docket No. 50-410

Enclosed is additional information requested by Mr. J. Ma on the description of the ICETRAN computer program entitled "Limiting Equilibrium Analysis in Soil Engineering."

This information was requested as a result of a conference call on September 24, 1984 between D. Hill, Niagara Mohawk, M. Haughey and J. Ma of the Nuclear Regulatory Commission.

The enclosed information will be included in the next Final Safety Analysis Report Amendment.

Very truly yours,

T. E. Lempges

T. E. Lempges
Vice President
Nuclear Generation

TEL/DS:ja
Enclosure

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
Niagara Mohawk Power Corporation	)	Docket No. 50-410
	)	
(Nine Mile Point Unit 2)	)	

AFFIDAVIT

T. E. Lempges, being duly sworn, states that he is Vice President of Niagara Mohawk Power Corporation; that he is authorized on the part of said Corporation to sign and file with the Nuclear Regulatory Commission the documents attached hereto; and that all such documents are true and correct to the best of his knowledge, information and belief.

T. E. Lempges

Subscribed and sworn to before me, a Notary Public in and for the State of New York and County of Onondaga, this 3 day of October, 1984.

Janis M. Macro
Notary Public in and for
Onondaga County, New York

My Commission expires:

JANIS M. MACRO
Notary Public in the State of New York
Qualified in Onondaga County No. 4784555
My Commission Expires March 30, 19 85

system is shown on Figures 2.5-126 and 2.5-127. A plan view of the flood control berm appears on Figure 2.5-128.

2.5.5.2 Design Criteria and Analyses

The slopes of the revetment-ditch system were designed to be stable under conditions imposed by the probable maximum wind storm (PMWS). Model tests were performed to determine the static stability of the system. Design criteria and results of these tests are discussed in Sections 2.4.5.1 to 2.4.5.5. The revetment-ditch system was also analyzed with respect to the factor of safety versus slope failure during a combination of storm and earthquake events. The following cases were considered:

Case I - Lake level at el 248.8' (25-year flood) + SSE (0.15 g)

Case II - Lake level at el 249.5' (100-year flood) + OBE (0.075 g)

Pseudo-static stability analyses were conducted for both of the above cases using an ICETRAN computer program entitled Limiting Equilibrium Analysis in Soil Engineering (Lease II). In this program, a given stability problem is specified to the computer in free format as a series of points and lines which comprise the soil layers and their associated piezometric surfaces. Any two-dimensional slope stability problem can be analyzed. Once the geometry, physical data, and strength parameters have been specified, a command is given to use the desired analytical procedure, whether it be the Normal, Bishop, or Morgenstern - Price method.

In the pseudo-static seismic analysis of the revetment-ditch system, slopes were analyzed using the modified Bishop method with a search for the minimum factors of safety. The seismic coefficients (0.15 for SSE and 0.075 for OBE) are applied in the horizontal and vertical direction at the centroid of a given slice. The effect of these accelerations in the Lease II program is an inertial force (that is, the weight of each slice multiplied by the seismic coefficient) which acts in the direction of sliding.

Conservative estimates were specified for unit weight and strength. The dolos armor units were assumed to act as a surcharge load. No benefit was considered for its interlocking tendencies during movement. Figure 2.5-135 illustrates the input geometry, parameters, and resulting critical failure surfaces. The minimum factors of safety (Bishop method) are 1.07 for Case I (SSE) and 1.51 for

Case II (OBE). Therefore, the revetment-ditch system is stable under these conservative environmental loadings.

2.5.5.3 Soil Investigation

Borings were drilled along the alignment of the revetment-ditch system[202].

2.5.5.4 Compacted Fill

This section provides information related to material properties, construction procedures, and placement control of the rock fill required for the revetment-ditch system as shown on Figures 2.5-126, 2.5-127, 2.5-127a, and 2.5-127b. Hydrologic and meteorologic aspects of the shore protection facility at the Unit 2 site are described in Section 2.4.3.

2.5.5.4.1 Rock Fill

The rock fill consists of backslope armor units, underlayers, and granular filters. They are quarried materials which consist of angular to subangular, hard, clean, sound, and durable rock with a minimum specific gravity of 2.50. All rock materials are verified through a quality test program that includes petrographic examination, bulk specific gravity and absorption test, and accelerated weathering test (freezing-thawing and wetting-drying). The rock is free of any deleterious materials, such as flat, elongated, friable, decomposed, micaceous, or argillaceous pieces, and is highly resistant to weathering and disintegration under freezing-thawing and wetting-drying conditions. The smallest dimension of any piece of backslope armor and first underlayer is at least one-third of its largest dimension.

Gradation limits and weight requirements for the backslope armor and underlayers are listed in Table 2.5-34. Gradation limits for granular filters are listed in Table 2.5-35.