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January 4, 1980

Mr. T. V. Wambach
Systematic Evaluation Program Branch
Division of Operating Reactors
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, Maryland 20555

Dear Mr. Wambach:

Subject: Oyster Creek Nuclear Generating Station
Docket No. 50-219
SEP Topic 111-6
Seismic Design Considerations

As you are aware, a substantial effort has been undertaken by the SEP Owners' Group over the past year and a half to reevaluate the seismic hazard at the SEP plant sites in the eastern United States. This work has included review and evaluation of the original licensing bases for the seismic design of the plants, performance by Weston Geophysical of an independent assessment of earthquake potential at eastern United States sites, and more recently, development of site specific response spectra based on the latest state-of-the-art methodology for individual SEP sites. A summary of docketed information on the Oyster Creek and nearby Forked River sites was previously provided to SEP Branch personnel in 1978. The results of the Weston Geophysical study are presented in the report "Eastern United States Tectonic Structures and Provinces Significant to the Selection of a Safe Shutdown Earthquake" dated August 1979. This report was recently transmitted to you by KMC, Inc. The purpose of this letter is to transmit the results of Jersey Central Power & Light Company analyses to develop seismic response spectra which are specific to the Oyster Creek site and which are suitable for the SEP re-evaluation of the seismic resistance of Oyster Creek systems and structures.

The results of the above evaluations, as they apply to the Oyster Creek site, can be summarized as follows:

1. Docketed Information

A number of studies made for the Oyster Creek and Forked River sites are reported in the Oyster Creek FDSAR and the Forked River PSAR. These studies conclude that the postulated Safe Shutdown Earthquake (SSE) for these sites has a Modified Mercalli Intensity of VII. A peak ground acceleration of 0.22 g was conservatively assigned to this design earthquake by Housner in 1964 based on limited data. Subsequent studies conducted by Woodward-Moorhouse and Associates ("Geotechnical Study, Proposed Radwaste and Off-Gas Buildings, Oyster Creek Nuclear Power

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Station", February 4, 1975) concluded that the maximum historic earthquakes in the same general region as Oyster Creek rank at the lower end of the broad definition of Intensity VII and would be characterized by a magnitude of less than 5.0. No attempt was made in these studies to determine the peak ground acceleration corresponding to an Intensity VII, magnitude 5.0, earthquake, although the Woodward-Moorhouse report indicated that based on more recent (1975) correlations, the 0.22 g value selected by Housner would be considered "conservative".

2. Weston Geophysical Study

Results of extensive analyses performed over the past year are presented in Weston Geophysical report "Eastern United States Tectonic Structures and Provinces Significant to the Selection of a Safe Shutdown Earthquake" dated August 1979. This evaluation considered currently available geological and geophysical data as well as seismicity in accordance with current criteria in Appendix A to 10 CFR, Part 100, and confirms that the appropriate Modified Mercalli Intensity for the Oyster Creek SSE is VII. The corresponding magnitude range was determined to be 4.5 to 5.2, the upper bound of which was estimated to have a mean annual risk less than 10. These values are consistent with results of previous studies.

3. Site Specific Spectra

Site specific design spectra have been developed for Oyster Creek by URS/J.A. Blume and Associates utilizing the Modified Mercalli Intensity VII Safe Shutdown Earthquake determined in the studies referred to above. The results of this work are presented in URS/Blume report "Oyster Creek Uniform Hazard Report" dated December 1979, which is attached for your review. The seismic response spectra and peak ground accelerations presented in this report are based on an Intensity VII SSE and a corresponding magnitude of 5.3, which is conservative compared to all previous site studies. The methodology used to determine the corresponding spectra consists of selecting a suite of appropriate strong motion earthquake records from the world-wide data base from which mean-centered spectra and peak ground accelerations are calculated. The strong motion records on which these results are based were selected so that they are representative of both the design SSE (i.e., magnitude and epicentral distance) and the specific geologic conditions (i.e. moderately deep alluvial soil) of the Oyster Creek site. This approach is technically superior to that used in the generation of the general design spectra in Regulatory Guide 1.60 which are based on ground motion records of earthquakes of varying magnitudes and epicentral distances (both near- and far-field) in different geological environments (both soil and rock sites).

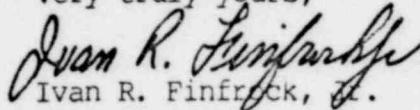
We also understand that the Regulatory Guide Spectra are based on fewer ground motion records than used by URS/Blume for the Oyster Creek site.

The mean-centered horizontal design response spectra for Oyster Creek are presented in Figures 1 and 2 of the attached report. They are characterized by a zero period acceleration of 0.07 g and a shape which is somewhat narrower than the general spectra of Regulatory Guide 1.60, as would be expected.

We consider the site specific response spectra presented in the enclosed report represent the most appropriate design SSE spectra for Oyster Creek and recommend that they be used for the purpose of any future structural evaluations which may be performed for the Oyster Creek plant.

We will be pleased to meet with you to discuss this matter in more detail at your convenience.

Very truly yours,


Ivan R. Finfrick, Jr.
Vice President

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cc: K. Jabbour, USNRC

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POOR ORIGINAL

SITE-SPECIFIC RESPONSE SPECTRA
FOR THE OYSTER CREEK NUCLEAR POWER PLANT

DECEMBER 1979

prepared for

Jersey Central Power and Light Company
Morristown, New Jersey

prepared by

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