Exelon Nuclear
200 Exelon Way
KSA3-N
Kennett Square, PA 19348

Telephone 610.765.5610
Fax 610.765.5755
www.exeloncorp.com

Exelon Nuclear

52.17

December 15, 2004

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Early Site Permit (ESP) Application for the Clinton ESP Site
Docket No. 52-007

Subject: Seismic High Frequency Considerations (TAC No. MC1122)

In its letter of April 25, 2003, Resolution of Generic Topic ESP-13, Seismic Evaluations, the Nuclear Energy Institute (NEI) stated in item '9' that "[t]o reduce the earthquake ground response spectra in the high-frequency region, the ESP applicant may utilize the methods in EPRI topical report TR-102470, *Analysis of High-Frequency Seismic Effects*, which demonstrates that such motions are not damaging." In its June 17, 2003 response, the U.S. Nuclear Regulatory Commission (NRC) indicated that "[I]tem 9 represents a technical position which will have to be addressed during the ESP application review."

Based on the NRC's response to item '9', Exelon Generation Company, LLC's (EGC) presented in its ESP application, seismic information pursuant to 10 CFR § 100.23 in terms of a risk-based approach premised on the referenced industry standard (the "ASCE Method" or "Standard") and includes a declaration that

> the resulting risk-consistent DRS exceed the spectra given in Regulatory Guide 1.60 anchored to 0.30g at frequencies from 16 Hz to 50 Hz. High frequency adjustments using procedures described in EPRI (1993b) and in ASCE 4 (1998) result in spectral accelerations at high frequencies which are approximately equal to or lower than those in Regulatory Guide 1.60 for facilities with plan dimensions of 75 ft to 150 ft, respectively. This information leads to a conclusion that a nuclear power plant can be constructed and operated at the EGC ESP Site without undue risk to the health and safety of the public and therefore, the EGC ESP Site would be suitable for any design based on a Regulatory Guide 1.60 spectrum. (EGC ESP Application, SSAR Section 3.4.2.1)[1]

[1] EGC's position with respect to high-frequency considerations is presented in Sections 2.5.4.9, 3.4.1.4.3, and 3.4.2.1 of the Site Safety Analysis Report portion of EGC's ESP application.

D073

At the meeting between the NRC and EGC on September 16, 2004, EGC inquired as to the NRC's intentions to address EGC's site suitability position regarding high frequency effects. Contrary to the NRC's position articulated in its letter to NEI of June 17, 2003, the NRC advised at the meeting and subsequently in its published meeting summary dated December 3, 2004 that it considers the high frequency effect to be "not relevant to the ESP review because the staff was only looking at defining the SSE for the ESP site," and therefore, this information would not be reviewed nor addressed in the safety review of the ESP application. However, the staff did agree to review the above-identified NEI letter and NRC response and provide EGC with any additional feedback on the issue resulting from that review.

While awaiting this feedback, EGC encourages the staff to consider the high frequency exceedance to be a site issue worthy of early resolution, i.e., at the ESP stage, and requests the NRC to consider it as such during its review of the subject ESP application.

Further, EGC is again reiterating the site suitability finding being sought - that the EGC ESP site would be suitable for any design based on a Regulatory Guide 1.60 spectrum anchored to 0.30g. Our basis for this finding is set forth below.

The exceedances of the Regulatory Guide 1.60 spectrum anchored to 0.30g are site specific and will not change with the choice of reactor design since this is the acceptance criterion against which all reactor designs are reviewed and accepted. Thus, the acceptability of the exceedances directly impacts the assessment of site suitability conducted under 10 CFR Part 52, subpart A, Early Site Permits. Further, while the EGC ESP application references an EPRI Topical Report (TR-102470, *Analysis of High-Frequency Seismic Effects*), the acceptability of the exceedances can be evaluated on a more generic basis (as evidenced by the recent resolution of GSI-194) and it represents an important factor in EGCs evaluation of future activity related to the subject site.

Specifically, the resolution of GSI-194 depends on an approximation based on an overall plant high confidence of a low probability of failure (HCLPF) value. The GSI-194 resolution relies upon an approximate method (by R. P. Kennedy) of estimating seismic risk using the plant HCLPF value. As indicated in the GSI-194 resolution paper, "[t]his method assumes that the seismic hazard curve can be approximated by an exponential curve and that the fragility curves can be approximated as being lognormally distributed. Both assumptions are reasonable approximations for the purposes of the screening of this issue. Using these assumptions, this method develops a closed form solution for the seismic risk, which was developed for use in sensitivity studies such as this. This method was used to develop a sense of the change in the risk estimates, based on the different seismic hazard curves (i.e., LLNL 1993 versus TIP 1998) for the Watts Bar site. As a caution, these are simplistic calculations that give a "ballpark" estimate of the seismic CDF. However, a reasonable estimate of the expected change in CDF resulting from the change to the latest seismic hazard estimate can be obtained by applying the same approach to both sets of seismic hazard information." The resolution concludes that the exceedance of the Regulatory Guide 1.60 spectrum has "been addressed through previous programs and recommends that the

issue be excluded from further analysis." While the panel's findings rely on the fact that the relay chatter issue has been properly disposed of in the IPEEE Program, i.e., when necessary, low-ruggedness relays have been replaced by higher capacity relays, this same consideration can be included as a condition of an early site permit.

As indicated in our recently (November 19, 2004) submitted white paper "*Risk (Performance-Goal) Based Approach for Establishing the SSE Design Response Spectrum Used in Exelon Generation Company Early Site Permit Application,*" the new Standard Plant designs have a Core Damage HCLPF seismic margin factor of at least 1.67, and this HCLPF has been utilized in determining the EGC ESP safe shutdown earthquake using the ASCE Method. Thus, while the seismic input in the high frequency end of the response spectrum can cause relay chatter and other effects to vibration-sensitive components, the impact can be considered and, if necessary, included as a condition of an early site permit.

Finally, EGC believes the unknown regulatory resolution of the high frequency issue under the revised 10 CFR Part 100 is a significant potential impact on the decision to proceed with a future facility at an ESP site. Thus, since the issue can be resolved, the issue is specific to the site, and one purpose of Part 52 is to provide early resolution of issues, EGC specifically requests the NRC consideration and review of the high frequency exceedance information, including the EGC requested finding that the EGC ESP Site would be suitable for any design based on a Regulatory Guide 1.60 spectrum anchored to 0.30g, as part of the EGC ESP review.

Please contact Eddie Grant of my staff at 610-765-5001 if you have any questions regarding this submittal.

Sincerely yours,

Marilyn C. Kray

Marilyn C. Kray
Vice President, Project Development

TPM/ERG

cc: U.S. NRC Regional Office (w/ enclosures)
Ms. Nanette V. Gilles (w/ enclosures)

AFFIDAVIT OF MARILYN C. KRAY

State of Pennsylvania

County of Chester

The foregoing document was acknowledged before me, in and for the County and State aforesaid, by Marilyn C. Kray, who is Vice President, Project Development, of Exelon Generation Company, LLC. She has affirmed before me that she is duly authorized to execute and file the foregoing document on behalf of Exelon Generation Company, LLC, and that the statements in the document are true to the best of her knowledge and belief.

Acknowledged and affirmed before me this 15th day of December, 2004.

My commission expires 10-6-07.

Vivia V. Gallimore

Notary Public

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Vivia V. Gallimore, Notary Public
Kennett Square Boro, Chester County
My Commission Expires Oct. 6, 2007
Member, Pennsylvania Association Of Notaries