

July 26, 2004

Ms. Marilyn Kray  
Vice President, Project Development  
Exelon Generation  
200 Exelon Way, KSA3-N  
Kennett Square, PA 19348

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 6 - EXELON  
EARLY SITE PERMIT APPLICATION FOR THE CLINTON ESP SITE (TAC NO.  
MC1122)

Dear Ms. Kray:

By letter dated September 25, 2003, Exelon Generation Company, LLC (Exelon) submitted its application for an early site permit (ESP) for the Clinton ESP site.

The Nuclear Regulatory Commission (NRC) staff is performing a detailed review of the Site Safety Analysis Report (SSAR) in your ESP application to ensure that the information is sufficiently complete to enable the NRC staff to reach a final conclusion on all safety questions associated with the site before the ESP is issued. The NRC staff has determined that additional information is necessary to continue the review. The topic covered in the request for additional information (RAI) contained in Enclosure 1 is hydrology. These RAIs were sent to you via electronic mail (e-mail) on July 14, 2004.

Receipt of requested information within 75 days of the date of this letter will support the NRC's efficient and timely review of Exelon's ESP application. Please note that failure to provide a response in a timely fashion may result in a delay of completion of the staff's safety evaluation report. If you have any questions or comments concerning this matter, you may contact me at (301) 415-1180 or [nvg@nrc.gov](mailto:nvg@nrc.gov).

Sincerely,

*/RA/*

Nanette V. Gilles, Exelon ESP Project Manager  
New Reactors Section  
New, Research and Test Reactors Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Docket No. 52-007

Enclosure: As stated

cc: See next page

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DOCUMENT NAME: C:\ORPCheckout\FileNET\ML042020002.wpd

ACCESSION NO. ML042020002

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DATE	07/20/04	07/20/04	07/21/04	07/23/04

**OFFICIAL RECORD COPY**

**Exelon Early Site Permit (ESP) Application  
Site Safety Analysis Report (SSAR) Sections 2.4, Hydrologic Engineering  
and 3.2, Thermal Discharges  
Requests for Additional Information**

SSAR Section 2.4.1, Hydrologic Description

RAI 2.4.1-1

Please provide survey coordinates (including elevations) for the bounding areas of all ESP safety-related structures including intake tunnels and piping corridors. Also provide the coordinates of existing aquifers in the bounding areas, particularly perched aquifers.

RAI 2.4.1-2

Please identify any limits on plant operation due to either water supply or intake water temperature for the ESP unit (e.g., need to derate or shutdown reactors if the intake temperature exceeds a certain threshold). Estimate the frequency and duration of the applicability of these operating limits.

RAI 2.4.1-3

The application states that no dams exist upstream of Clinton Lake that could affect the availability of water to the ESP site. Please provide references that confirm this assertion and that no future dams upstream of the site are currently proposed.

RAI 2.4.1-4

Please provide any information regarding proposed land use changes that might result in increased bed load in the tributaries upstream of Clinton Lake or sediment deposition in the ultimate heat sink (UHS).

RAI 2.4.1-5

Table 2.4-2 shows the percentage of rainfall as runoff and mean lake evaporation. Please provide copies of the references for these estimates.

SSAR Section 2.4.2, Floods

RAI 2.4.2-1

The Probable Maximum Precipitation (PMP) for Clinton Dam was obtained using Hydrometeorological Report No. 33 (HMR 33); however, the current standards are American National Standards Institute/American Nuclear Society (ANSI/ANS)-2.8-1992, HMR 51, and HMR 52. Please explain why the current standards were not used. Also, please explain why an estimate based on HMR 33 is conservative relative to an estimate based on HMR 51 and HMR 52.

RAI 2.4.2-2

Please provide a description of likely changes to both upstream land use and downstream water demand that would alter either the intensity or frequency of flood risk and low-flow conditions.

RAI 2.4.2-3

Please document any historical hill slope failures in the watershed. Also, please analyze the ability of a hypothetical hillslope failure to impact the plant. What would be the maximum terminal height of such a hypothetical wave?

RAI 2.4.2-4

Please document any seismically-induced seiches in Clinton Lake.

RAI 2.4.2-5

Please demonstrate that the drainage capacity at the existing grade is sufficient to accommodate local intense precipitation. If the capacity is not sufficient, please describe any active safety-related drainage systems that will be installed for the new units.

SSAR Section 2.4.3, Probable Maximum Flood on Streams and Rivers

RAI 2.4.3-1

Please describe the status of the U.S. Army Corps of Engineers SPRAT computer program referenced in Section 2.4.3.3 and any software quality assurance measures that were used to augment use of this software in support of the ESP application.

RAI 2.4.3-2

Please explain how the wave runup calculations were bounded through the examination of the Combined Events Criteria indicated in the ANS 2.8 1992 Standard. Discuss coincident wave calculation and the basis for applying a 40 miles per hour (mph) design wind.

SSAR Section 2.4.7, Ice Effects

RAI 2.4.7-1

Please discuss the potential for ice sheet collision impacts on the intake structure and quantify the force of impact.

RAI 2.4.7-2

Please explain how the ice sheet thickness identified in Section 2.4.7 was calculated and provide the input assumptions.

RAI 2.4.7-3

Please describe the relationship (layout and depth) of the ESP intake relative to the current Clinton Power Station (CPS) intake.

RAI 2.4.7-4

Please describe the site characteristics of frazil and anchor ice formation.

RAI 2.4.7-5

Please discuss the impacts to ice formation if the existing unit was no longer operating.

RAI 2.4.7-6

Please discuss whether or not ice sheet formation is likely to constrain the intake depth.

RAI 2.4.7-8

Please describe the reduction of UHS capacity caused by a loss of Clinton Dam during periods when an ice sheet is covering the lake.

SSAR Section 2.4.8, Cooling Water Canals and Reservoirs

RAI 2.4.8-1

Please explain how the cooling needs for the CPS and ESP facilities were calculated as discussed in Section 2.4.8.1.5.

RAI 2.4.8-2

Please discuss how the flow velocities were computed over the crest and toe of the submerged UHS dam discussed in Section 2.4.8.1.5. Please provide figures indicating where the toe of the UHS dam is relative to the fill shown in Figures 2.4-14 and 2.4-15.

RAI 2.4.8-3

Please describe lake drawdown calculations.

RAI 2.4.8-4

Please describe how UHS capacity loss due to sediment or debris loads during extreme events was estimated.

SSAR Section 2.4.9, Channel Diversions

RAI 2.4.9-1

Please provide references to studies related to geological features or other characteristics that preclude any likelihood of channel diversion upstream of the site.

SSAR Section 2.4.10, Flooding Protection Requirements

RAI 2.4.10-1

A design wind of 40 mph was mentioned in the second paragraph of Section 2.4.10 and earlier in Section 2.4.3.6. In the third paragraph of Section 2.4.10, 48 and 67 mph winds are mentioned for wave run up consideration at the intake facility. Please discuss the differences in these design winds and the methods for determining both these design winds.

SSAR Section 2.4.12, Dispersion, Dilution, and Travel Times of Accidental Releases of Liquid Effluents in Surface Waters

RAI 2.4.12-1

Please provide additional information regarding the likelihood for liquid effluents to reach a surface water body.

SSAR Section 2.4.13, Groundwater

RAI 2.4.13-1

Please provide a description of the local subsurface environment adequate to understand groundwater pathways from the plant including subsurface disturbances of local strata from structures and perched aquifers.

SSAR Section 3.2.2, Ultimate Heat Sink

RAI 3.2.2-1

Please provide a schematic that describes water circulation in the UHS.

RAI 3.2.2-2

Please describe the consequences of a failure of the baffle in the UHS.

Distribution for Request For Additional Information Letter No. 6 dated July 26, 2004

Hard Copy

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