

December 14, 2006

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
)
EXELON GENERATION COMPANY, LLC.) Docket No. 52-007-ESP
)
(Early Site Permit for Clinton ESP Site))

NRC STAFF'S RESPONSE TO THE BOARD'S DECEMBER 12, 2006, ORDER

In its Order the Board directed the Staff (1) to "provide its explanation for rejecting the Applicant's proposal, and (2) to provide "a concise description of [its] understanding of the scope of the Hydrology-related Permit Conditions. The Staff's response follows:

NRC Staff's Response to Order Issue (1):

The NRC Staff does not believe that an additional permit condition, or an expansion of Permit Condition 3, to include other piping leading into the radwaste building or to impose a gradient or other design features to preclude the release of radwaste is necessary. The hydrologic permit conditions listed in the SER as well as the analyses for the other SSCs appropriately address this issue.

Permit Conditions 3 and 4 impose more stringent safety standards than the Applicant's proposed permit condition. First, Permit Condition 3 imposes an obligation "to ensure that the hydraulic gradient will always point inwards into the radwaste holding and storage facility from ambient groundwater during construction and operation of the ESP facility, including the time during which recovery of groundwater occurs to near its pre-dewatering elevation." SER at A-3. The Staff believes that Permit Condition 3 mirrors the second half of the Applicant's proposed

permit condition and that this half of the proposed condition would, therefore, be unnecessary. Second, Permit Condition 4 imposes an obligation to include “features to preclude any and all accidental releases of radio-nuclides into any potential liquid pathway.” SER at A-3. The Staff believes that Permit Condition 4 addresses the concerns raised by the first half of the Applicant’s proposed permit condition and that this half of the proposed permit condition would, therefore, be unnecessary. The Staff’s permit conditions would also impose greater restrictions on the Applicant than would the proposed condition because the Applicant would be required to meet both Permit Conditions 3 and 4. In contrast, under the Applicant’s proposed permit condition, the Applicant would have the option of either including “other piping leading into the radwaste building” or having “a gradient or . . . other design features” that would preclude a release.

The Staff believes that Permit Conditions 3 and 4 provide adequate protection against the release of radio-nuclides into the ambient groundwater. Furthermore, additional engineering considerations – specifically the fact that all sources of liquid radioactive effluent-carrying SSCs outside of the area between the nuclear island and the radwaste building are to be engineered to preclude any release – make it unnecessary to expand Permit Condition 3 to include “other piping leading into the radwaste building or other buildings with liquid radwaste.” Based on these considerations, the Staff rejected the Applicant’s proposed permit condition; all of the elements of the proposed condition are addressed by Permit Conditions 3 and 4 and by the engineering characteristics of any facility that would be built at the EGC ESP.

NRC Staff’s Response to Order Issue (2):

The Staff proposed three permit conditions during its hydrology review. All three permit conditions are associated with concerns about radioactive liquids released to the environment.

Permit Condition 3 makes explicit the commitment made by the Applicant that the hydraulic gradient will always point inward to preclude any release to the accessible

environment. This Permit Condition must be satisfied for the range of credible conditions associated with various ranges of groundwater conditions that could occur throughout the plant's life. Permit Condition 5 requires that the applicant have an adequate monitoring program to ensure that the hydraulic gradient condition is always satisfied. At the COL stage, the Staff will review the applicant's monitoring program to ensure that it would detect any anomalies in the piezometric head around the boundaries of engineered structures that might contain liquid radiological effluents.

Permit Condition 4 requires that the radwaste facility be designed to preclude any and all releases to any potential liquid pathway outside the engineered system. "Liquid pathways" include both surface water and groundwater pathways outside an engineered system. However, it should be noted that the Staff does not require releases that remain confined within engineered systems to be precluded. For instance, leaks from a pipe that remain confined within a guard pipe that are detected and corrected before radioactive material escapes into the environment are not considered releases by the Staff under this permit condition. This permit condition provides additional assurance of protection in areas where the hydraulic gradient may be transient or small. The phrase "any and all releases" is intentionally comprehensive. "Any" refers to any type of liquid release mechanisms and "all" refers to all components that might contain radiological effluents.

These permit conditions are based upon the defense-in-depth concept, such that either Permit Condition 3 or 4 can provide protection of the groundwater resources. However, the Staff concluded that these overlapping layers of protection would reduce the need for additional monitoring outside the engineered system to ensure that inadvertent releases do not threaten public health and safety.