ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
UNITED STATES ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

January 14, 1975

Honorable Dixy Lee Ray
Chairman
U. S. Atomic Energy Commission
Washington, D. C. 20545

Subject: REPORT ON THE SITE FOR DOUGLAS POINT NUCLEAR GENERATING STATION

Dear Dr. Ray:

At its 177th meeting, January 9-11, 1975, the Advisory Committee on Reactor Safeguards completed its review of site related matters pertaining to the application of the Potomac Electric Power Company for a permit to construct the Douglas Point Nuclear Generating Station, Units 1 and 2. This project had been considered previously during a Subcommittee meeting in Washington, D. C., on December 13, 1974, subsequent to a tour of the site. During its review, the Committee had the benefit of discussions with the AEC Regulatory Staff and representatives and consultants of the Applicant, the General Electric Company, and Ebasco Services, Inc. The Committee also had the benefit of the documents listed.

The Douglas Point Nuclear Generating Station will be located on the east bank of the Potomac River in Charles County, Maryland, about 34 miles south-southwest of Washington, D. C. The site area comprises 1369 acres. The nearest population center is Woodbridge-Marumsco, Virginia, which is located 13 miles north of the site and which had a 1970 population of 25,412. The Applicant has selected a minimum exclusion area distance of 3200 feet (976 meters) and the low population zone radius is 3 miles. The population within the LPZ is reported to be 660, including weekend and summer residents.

The Douglas Point Station will utilize two General Electric BWR/6 reactors similar to those approved for the Perry and Allens Creek Plants. Construction of the Douglas Point Station, however, is not scheduled to begin for several years and initial operation of Unit 1 is set for the spring of 1985.

The soil in the foundation area for the Station is a very dense silty sand. The foundation for each associated building will be separate and will be isolated. Differential settlement and seismic motion will be taken into account in the design of interconnecting piping and systems. The Applicant has proposed compacting the backfill and drainage blanket material to an average relative density of 80%. The Regulatory Staff does not believe that the Applicant has demonstrated adequately that the soil placed and compacted according to this criterion will be adequate to support plant structures during occurrence of the Safe Shutdown Earthquake, and therefore

has recommended that Category I backfill and drainage blanket material be compacted to an average relative density of 85%, or to 95% of Modified Proctor, whichever results in the greater dry unit weight. This matter should be resolved to the satisfaction of the Regulatory Staff.

The Applicant proposes to use two natural draft cooling towers in a closed cycle system for the normal mode of thermal energy rejection. The ultimate heat sink will consist of the Potomac River estuary and a dredged intake lagoon which will supply the heat sink cooling water to the intake structure. The intake structure will be protected from the intrusion of barges by a row of dolphins. The Applicant, however, has not demonstrated that malfunctioning and blockage of vital pumps in the intake structure cannot occur due to either postulated liquefaction of the intake lagoon slopes or from the flow failure of dredged material and dikes adjacent to the intake structure. The Committee recommends that a conservative approach be taken in assuring the integrity of the ultimate heat removal capability. This matter should be resolved in a manner satisfactory to the Regulatory Staff.

At the site for the Station, the width of the Potomac River is approximately 3 miles. Because the meteorological dispersion of airborne materials over water is generally not as rapid as it would be over land, this situation could result in people living on the west bank of the River being brought closer to the Station in a meteorological sense. The Committee recommends that this matter be given further study, particularly with respect to the evaluation of population doses under accident conditions.

The Quantico Marine Corps Air Station is located about 4.5 miles north-northwest of the proposed Station. Preliminary analysis of the probability of an aircraft crash on critical Douglas Point Nuclear Generating Station structures resulting from current and future flight operations at Quantico indicate that protection should be provided for the crash of a 55,000 pound helicopter. These analyses should be reviewed to assure that protection is not needed against larger fixed wing aircraft and that safety related structures at the site will not be adversely affected by fumes and fuels released in the area as a result of an aircraft crash. This matter should be resolved in a manner satisfactory to the Regulatory Staff. The Committee wishes to be kept informed.

The Committee believes that the Safe Shutdown Earthquake acceleration value of 0.20g has been determined in accordance with the procedures prescribed in Appendix A of 10 CFR Part 100, and that this value is consistent with those that have been used for other sites in the Atlantic Coastal Plain and Piedmont tectonic provinces. The Applicant must realize, however, that some changes in the criteria of Appendix A are now under consideration. If changes are made, the Committee believes that they should be applicable to the Douglas Point Station to the same extent as to other plants being considered for construction permits at the same time.

Subject to the foregoing comments, the Committee believes that the site is acceptable for the proposed Douglas Point Nuclear Generating Station.

Sincerely yours,

/s/ W. Kerr

W. Kerr
Chairman

References:

1. Potomac Electric Power Company (PEPCO) Preliminary Safety Analysis Report (PSAR), Volumes 1-9, for the Douglas Point Nuclear Generating Station, Units 1 and 2

2. Amendments 1-22 to Preliminary Safety Analysis Report

3. Potomac Electric Power Company letter dated April 19, 1974 advising that they will incorporate, by reference to GESSAR, the new designs for PWR/6 reactors

4. Potomac Electric Power Company letter dated July 2, 1974 concerning commitments the Applicant made in discussions with the Regulatory Staff

5. Potomac Electric Power Company letter dated November 22, 1974 transmitting descriptions, clarifications and commitments to information contained in the Preliminary Safety Analysis Report

6. Directorate of Licensing letter dated December 17, 1974 requesting ACRS review of site related matters

7. Directorate of Licensing letter dated December 26, 1974 transmitting Summary of Outstanding Site Related Safety Matters and site related sections of the Safety Evaluation Report