

Response to DNR Data Request No. 1
Maryland Public Service Commission Case No. 9127
UniStar Nuclear Energy, LLC and UniStar Nuclear Operating Services, LLC

Question 1-14

In reference to Section 4.4.2.3 (p. 4-13) of the Technical Report, provide the results of the geotechnical and hydrogeologic investigations conducted at the site, including, but not limited to, the data collected from the 40 ground water observation wells to evaluate subsurface flow directions, determine vertical flow gradients, and measure field hydraulic conductivity.

RESPONSE

Data collected from groundwater observation wells installed for the CCNPP site subsurface investigation were used to determine groundwater elevation trends. A total of 40 new observation wells with depths extending to 122 ft (37 m) below ground surface were installed from May to July 2006. Observation wells were installed in three distinct groundwater bearing intervals: the Surficial aquifer (17 wells), a deeper sand unit at the top of the Chesapeake Formation informally referred to as the Upper Chesapeake unit (20 wells), and an even deeper sand unit in the Chesapeake Formation informally called the Lower Chesapeake (3 wells). No wells were installed in the deeper Piney Point - Nanjemoy aquifer.

Three well series designations are assigned to the CCNPP Unit 3 observation wells.

- OW-300 Series wells are located in the proposed CCNPP Unit 3 power block area.
- OW-400 Series wells are located adjacent to the Unit 3 power block, generally to the southeast.
- The OW-700 Series wells include all of the wells located outside of the power block areas. The OW-700 Series wells are located in the proposed cooling tower, switchyard, and support facility areas.

To evaluate vertical hydraulic gradients, several observation wells were installed as well clusters. Well clusters are a series of wells placed at the same location, with each well monitoring a distinct water bearing interval. Four well clusters were installed to evaluate the hydraulic gradient between the Surficial aquifer and the Upper Chesapeake unit, and three well clusters were installed to evaluate the gradient between the Upper Chesapeake and Lower Chesapeake units. Table 1 provides well construction details for the observation wells installed onsite. Table 2 provides the groundwater elevation from these wells over time, listed in numerical order, while Table 3 presents a summary of the observation wells data, segregated by aquifer, and used in the evaluations.

The 40 groundwater observation wells installed in connection with CCNPP Unit 3 site subsurface evaluation were slug tested to determine in-situ hydraulic conductivity values for the Surficial aquifer and Upper and Lower Chesapeake units. Table 4 summarizes the test results.

Soil samples collected from the Surficial aquifer, Upper Chesapeake and Lower Chesapeake units during the geotechnical investigation were submitted for laboratory tests to determine moisture unit weight, moisture content, and specific gravity. Testing results are included in Table 5.