

Application NAB-2007-08123-M05
Response to U.S. Army Corps of Engineers Information Request Dated 01/16/09
Calvert Cliffs 3 Project, LLC and UniStar Nuclear Operating Services, LLC
February 12, 2009

Question 1

Provide write up on thermal issues associated with new discharge. (316-A)

RESPONSE

Under restrictions imposed by Section 316 of the Federal Clean Water Act, closed-cycle cooling is the only practical alternative for CCNPP Unit 3 that would meet both the Section 316(b) intake requirements at new facilities, as well as the Section 316(a) thermal requirements at this multi-facility site. The CWS at CCNPP Unit 3 dissipates up to $1/108 \times 10^{10}$ BTU/hr (2.792×10^9 Kcal/hr) of waste heat rejected from the main condenser and the Closed Loop Cooling Waster System (CLCWS) during normal plant operation at full station load.

The primary external impact will be the discharge of cooling tower blowdown water to the Chesapeake Bay. A common retention basin will hold cooling tower blowdown and effluents from the Desalination Plant and the wastewater treatment plant before discharging, further reducing thermal impacts to receiving waters.

The CCNPP Unit 3 discharge system, including the multi-port diffuser system, assumes a delta-T of 12° F for modelling* purpose and is designed to minimize the potential impact of the thermal plume as it enters the Chesapeake Bay. The subsurface diffusers create rapid mixing of the thermal effluent with ambient tidal flows. Tidal currents driven by the rise and fall of tides in the Chesapeake Bay largely determine plume size and shape.

* A conservative assumption based on the once through cooling system of Calvert Cliffs Units 1 & 2.