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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029
July 9, 2010

Ms. Laura M. Quinn, Environmental Project Manager
T-7D30
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

RE: Comments on the Draft Environmental Impact Statement for the Combined License (COL) for Calvert Cliffs Nuclear Power Plant Unit 3 – NUREG - 1936.

Dear Ms. Quinn:

In accordance with Section 102(2) (C) of the National Environmental Policy Act (NEPA), 42 U.S.C. § 4332(2) (C); Section 309 of the Clean Air Act, 42 U.S.C. § 7609; and the Council on Environmental Quality (CEQ) regulations, 40 CFR Parts 1500-1508, the United States Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) for the above referenced project. The DEIS was prepared to assess the potential environmental impacts that would result from the construction and operation of an additional nuclear power unit (Unit 3) at the Calvert Cliffs Nuclear Power Plant facility.

UniStar (project sponsor) proposes to construct and operate an Areva U.S. EPR 4500MW(t) pressurized-water reactor at its Calvert Cliffs Power Plant facility located in Calvert Cliffs, Maryland. The proposed Unit 3 would use a closed-cycle, mechanical draft cooling towers, with makeup water supplied by the Chesapeake Bay.

EPA has developed a set of criteria for rating Draft Environmental Impact Statements. The rating system provides a basis upon which EPA makes recommendations to the lead agency. Based on this rating, EPA has rated the Calvert Cliffs Nuclear Power Plant Unit 3 DEIS as an Environmental Concerns 2 (EC-2). An EC rating means the review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. The numeric rating assesses the adequacy of the Environmental Impact Statement. The 2 rating indicates that the DEIS does not contain sufficient information to fully assess environmental impacts that should be avoided in order to fully protect the environment. A copy of our rating system is attached, and can also be found at: <http://www.epa.gov/Compliance/nepa/comments/ratings.html>. The identified additional information, data, analysis, or discussion should be included in the final EIS. The basis for this rating is reflected in the attached comments. A summary of EPA's concerns include:

- Impacts to Historic and Cultural Resources
- Impacts to Freshwater and Related Aquatic Resources



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- Cooling Water Intake and Discharge Impacts on the Chesapeake Bay Water and Aquatic Resources
- Environmental Justice Analysis
- Air Conformity Determination and the Limited Work Authorization Regulation
- Greenhouse Gas Emissions

EPA appreciates the NRC's efforts in early coordination with the development of the DEIS and looks forward to continued cooperation in the development of the final Environmental Impact Statement. If you have any questions regarding our concerns, please feel free to contact me or Kevin Magerr at (215) 814 5724

Sincerely,



Jeffrey Lapp, Associate Director
Office of Environmental Programs

cc: Kathy Anderson, USACOE
Woody Francis, USACOE

Attachments:



Comments on the Draft Environmental Impact Statement (EIS) for the Combined License (COL) for Calvert Cliffs Nuclear Power Plant Unit 3

General Comments

1. Section 2.3.1.1, Surface-Water Hydrology, Figure 2-8 is unclear in identifying the surface water hydrologic features on the Calvert Cliffs site (tributaries and other water resources are not delineated or clearly marked making it difficult to assess the impacts to the resource)
2. Section 4.3.1.1, Chesapeake Bay Critical Area (CBCA), it is reported that approximately 33.4 ac within the CBCA would be disturbed. It is unclear from Figure 4-2 where the proposed mitigation would take place.
3. Section 4.3.1.3 identifies the extent of impacts to non-tidal wetlands of the Calvert Cliffs site. Table 4-3 along with narrative text groups the wetlands into nine Wetland Assessment Areas. These nine Wetland Assessment Areas should be identified in Figure 4.3 to clarify the impacts to these areas.
4. The DEIS reports a natural oyster bar (NOB 19-2) just off shore of the Calvert Cliffs site. It also reported that dredging of the barge dock area and the trenching of the cooling water discharge pipe will have impact to this oyster bar area. Methods to avoid impact to the oyster bar should be included; if impacts are unavoidable, minimization of impacts are expected and appropriate compensatory mitigation should be proposed as required by 40 C.F.R 230.10(d); 230.93..
5. Recently the leakage or the discharge of tritium from nuclear power operations has raised concern at the NRC, however it appears the DEIS does not have any discussion on the potential sources, impact and protective measures to avoid or minimize leaks or discharges.
6. Figure 3-1 that depicts Calvert Cliffs' site, the layout and the aquatic resource are not clearly marked. References to certain facilities in the chapter are not indicated in the figure (Camp Conoy, independent spent storage instillation). No compass orientation is provided.
7. Figure 3.4 is unreadable to determine drainage areas. The figure does not include the stormwater management system.
8. Section 3.2.2.1 states the, "Pervious areas managed to reduce runoff and maintained free of vegetation would experience considerably higher recharge rates than adjacent areas with local vegetation." That statement could be true if the managed unvegetative areas are designed for infiltration and the soils are not compacted. In many cases these areas are compacted resulting in runoff rates similar to pavement. Further, vegetative areas provide a root system which assist in promoting greater infiltration.

Impacts to Historic and Cultural Resources

9. Section 4.1, Land-Use Impacts, the DEIS mentions that small portions of the currently proposed Captain John Smith Chesapeake National Historic Trail and the Star-Spangled Banner National Trail would be converted from recreational land use to industrial land use. The DEIS should explain what these historic trails are and how the land use

conversion would change their use (would this change disrupt trail activities?). It would also be helpful if this conversion could be quantified.

Freshwater and Related Aquatic Resources

10. Section 4.2.2 Water Use Impacts, the loss of groundwater recharge to the surficial aquifer could have significant impact on water quality and ecological function on the head waters tributaries and associated wetlands as well as to the base flow of John's Creek and related wetlands (it was reported that the base flow could drop as much as 50%). How are these impacts being minimized?
11. EPA agrees with the DEIS that the impacts to the aquatic resources due to the construction of Unit 3 and the 130 acre increase of impervious area can be classified as moderate. EPA believes the credited mitigation should include mitigation measures that are separate from measures that are required under other regulatory mechanisms.
12. While reported in the DEIS that the environmental impacts from Total Dissolved Solids (TDS) deposition from the cooling tower on vegetation would be negligible for both vegetation on site and in the vicinity, EPA recommends that a monitoring program be developed to monitor localized vegetation for the potential TDS stress. Further, EPA believes that deposition on impervious areas that drain to the headwater streams could cause higher TSD concentrated flows (both surface and shallow groundwater flow). EPA also recommends that those streams be monitored for TDS stress as well.

Cooling Water Intake and discharge impacts on the Chesapeake Bay Water and Aquatic Resources

13. The FEIS should include a discussion of mitigation measures for all water related construction activities (cooling water intake and discharge structures, fish return system, barge dock improvements and access channel, etc.) that minimize impacts to the aquatic resource. Those measures should include but not be limited to aquatic resource seasonal construction restrictions, the employment of noise or shock abatement systems, and turbidity abatement measures.
14. EPA does not agree with the DEIS statement that the Chesapeake Bay has generally high productivity (page 5-16, line 12). To the contrary, EPA and others have reported that the Chesapeake Bay continues to have poor water quality, degraded habitats and low populations of many species of fish and shellfish (EPA Bay Barometer EPA-903-R-09-001, March 2009). However, EPA does agree with the DEIS that the primary concerns for aquatic resources related to the water intake and consumption use are the amount of water drawn from the cooling water source, the Chesapeake Bay, and the potential for organisms to impinged on the intake screens, entrained in the cooling water system or entrapped within the common intake forebay. EPA has concerns with the mortality of the billions of aquatic organisms including fish fertilized eggs, larvae, juveniles, and adults associated with the existing, and now with additional impacts related to the proposed cooling system for unit 3. EPA believes that the overall aquatic mortality rate should be reduced. EPA suggest that a discussion of possible measures to reduce the overall mortality rate from Units 1, 2 and 3 be included in the DEIS. Possible considerations should include but not be limited to the design of a comprehensive closed loop cooling water system for Units 1, 2 and 3.
15. An increase in thermal discharge may also contribute to hypoxic zones or to the



exacerbation and spread of parasites like *Perkinsus marinus* within Oyster populations. There is some concern that the Abbe (1987) study may not be representative of current conditions in the waterbody due to ongoing development of the Chesapeake watershed

Environmental Justice Analysis

16. The Environmental Justice Methodology discussion starts on page 2-115. The second of the screening criteria states, “the percentage of the population of interest in the census block group is significantly greater (at least 20 percent) than the minority or low-income population percentage in the respective state.” What is the scientific or statistical basis for the selection of the minority or low-income population percentage having to be at least 20 percent greater than the minority or low-income population of the respective state?
17. The Environmental Justice guideline stated in the DEIS may be interpreted two ways. It is not clear if the guideline calls for increasing the state minority or low-income population percentage by 20 percentage points, for example from 10% to 30% for benchmarking purposes, or if the intension is to increase the state minority or low-income population percentage by 20% from 10% to 12%, for example. The clarification of this benchmark is very important to the assessment. In fact, the first method, adding 20 percentage points to the state minority or low-income population percentage, has a disproportionately high impact on communities in states with low percentages of minority or low-income populations. Setting the benchmark at the state minority or low-income population percentage plus 20 percentage points would mean that a community in a state with a minority or low-income population percentage of 5% would have a benchmark of 25%, and increase of 400%. A community in a state with a minority or low-income population percentage of 10% would have a benchmark of 30%, an increase of 200%. On the other hand, increasing the state minority or low-income population by 20% would mean that a state with a minority or low-income population of 5% would have a benchmark of 6%, a 20% increase. A state with a 10 percent minority or low-income population would have a benchmark of 12%, a 20 % increase, and a state with a minority or low-income population of 30% would have a benchmark of 36%, a 20% increase. Which method is being used?
18. The health considerations cited on pages 2-116 and 2-117 seem vague and subjective. The health considerations include:
 - Are the radiological or other health effects significant or above the generally accepted norm?
 - Is the risk or rate of hazard significant and appreciably in excess of the general population?
 - Do the radiological or other health effects occur in groups affected by cumulative or multiple adverse exposures from environmental hazards?
 - Is there an impact on natural or physical environment that significantly and adversely affects a particular group?
 - Are there any significant adverse impacts on a group that appreciably exceed or [are] likely to appreciably exceed those on the general population?
 - Do the environmental effects occur in groups affected by cumulative or multiple adverse exposures from environmental hazards?

For question One, what is meant by significant? Are there health indicators or health



benchmarks that could be used to focus the investigation objectively? What is meant by norms in this case? Is this language referring to state or national averages for health outcomes associated with the concern? Question Two poses a similar problem. How do we determine what is appreciably in excess of the general population with respect to risk or rates of hazard? What are the benchmark values that are being used to conduct this evaluation? Since work on cumulative risk and cumulative impacts is limited, how can Question Three be fairly used as an assessment criterion? The state of study of cumulative impacts is such that Questions Three and Six can not be accurately answered. EPA believes additional thought needs to be put into the development of more clear and concise assessment criteria that are objective in nature, and that represent real opportunities to identify and assess at-risk populations.

19. The resolution of Figures 2-16 and 2-17 is too small to provide any meaningful information. It is difficult to see or identify the areas of concern, or to verify that the right areas have been identified.
20. Two public comments on Environmental Justice (as reported in the appendix) do not assure that the interests and concerns of minority and low-income populations were adequately represented. It seems that a number of groups participated in the outreach effort, but the information presented does not provide enough information to support the notion that the outreach was appropriate, adequate or that it reached significant numbers of people in the target communities. Grassroots Environmental Justice Organizations and organizations representing the interests of minority and low-income populations were not evident.
21. The review of subsistence and communities with unique characteristics seems inadequate. It is suggested that Dr. Vince Leggett of the Maryland Department of Natural Resources be contracted regarding this issue. It appears the assessment did not include any dialogue with the minority populations in the area, minority organizations related to such interests (there are such organizations), nor did the study use any data for groups of people in close proximity to the site. It seems unreasonable to conclude that no potential concern exists, when the appropriate data required to answer the question were not obtained. The subsistence fishing information gathered for minority communities at the edge of the study area should have been insightful, and lead to more focused study in the area of greatest concern.
22. Section 4.5.1, Health Impacts (and in other areas of the document), follows a train of thought that causes concern. It focuses on unique practices or characteristics that would lead to minority populations being impacted differently from the general population. That is an appropriate consideration. But it is *also* important to look also at where are the exposures occurring? What other risks or concerns are there that would put one segment of the population at elevated risk? Are there factors that need to be taken into consideration in this assessment that may provide information as to the potential for adverse impacts to occur in minority or low-income populations? Questions should focus on proximity to sources of exposure. Are there minority or low-income populations in close proximity to construction or other activities that may have adverse impacts or be sources of exposure? Are construction activities occurring in close proximity to minority or low-income populations? How will fugitive dusts be controlled? Who lives closest to these emissions? Is there the potential for adverse impacts upon drinking water sources in the area? If so, who lives near those sources? How will fishing be impacted by the project? What impact will the project have on those that are subsistence fishermen? These are the types of questions that EPA believes need to be asked.



23. No data are presented anywhere in this document that support statements stating that no adverse health, radiological, or non-radiological impacts are to be expected for minority and low-income populations as a result of the project. EPA recommends that supportive data and references be provided. [Where are the studies?]
24. Section 3.2.2.1 describes the intention of the stormwater management system to provide a safety function to keep locally intense precipitation from flooding safety related structures. It is unclear whether the stormwater management system is protective of water quality and the downstream channel, as well as whether it maintains stream ecological flows. EPA recommends that this be clarified in the FEIS.

Air Conformity Determination and the Limited Work Authorization Regulation

25. In Section 2.9.2 Air Quality the DEIS states that the NRC will comply with the requirements of the Clean Air Act (42 U.S.C. 7506) and air conformity regulation under 40 CFR 93.150 outside of the NEPA process. While such an approach is acceptable under the general conformity regulations, please be aware that the Limited Work Authorization Regulation (Final Rule 10/9/2007) does not preclude emissions from construction activities from inclusion in the air emissions inventory for determining applicability of conformity under 40 CFR 93.153, regardless of whether those emissions have a reasonable nexus to radiological health and safety and/or common defense and security.

Greenhouse Gases

26. In Section 7.6.2., Greenhouse Gas Emissions, the DEIS references a U.S. Global Change Research Program report evaluating the cumulative impacts of GHGs. Beyond mentioning the report, EPA recommends that the FEIS include a brief, qualitative summary of the potential impacts of climate change at global, national, and the relevant regional scale.
27. EPA also recommends that the discussion of mitigation in the FEIS analyze opportunities to reduce GHG emissions during construction and operation of the facility, e.g., through energy efficiency and/or use of renewable energy.
28. Finally, in Section 9.2.5., Summary Comparison of Energy Alternatives, NRC concludes that nuclear power results in significantly lower CO₂ emissions than coal or natural gas-fired generation. EPA recommends that the discussion also state that lower CO₂ emissions would result in lower climate change risks. See, e.g., CEQ's draft NEPA Guidance on Consideration of the Effects of Climate Change and GHGs (2/18/10) (GHG emission levels can serve as a reasonable proxy for climate change impacts).



RATING THE ENVIRONMENTAL IMPACT OF THE ACTION

- **LO (Lack of Objections)** The review has not identified any potential environmental impacts requiring substantive changes to the preferred alternative. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposed action.
- **EC (Environmental Concerns)** The review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact.
- **EO (Environmental Objections)** The review has identified significant environmental impacts that should be avoided in order to adequately protect the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). The basis for environmental Objections can include situations:
 1. *Where an action might violate or be inconsistent with achievement or maintenance of a national environmental standard;*
 2. *Where the Federal agency violates its own substantive environmental requirements that relate to EPA's areas of jurisdiction or expertise;*
 3. *Where there is a violation of an EPA policy declaration;*
 4. *Where there are no applicable standards or where applicable standards will not be violated but there is potential for significant environmental degradation that could be corrected by project modification or other feasible alternatives; or*
 5. *Where proceeding with the proposed action would set a precedent for future actions that collectively could result in significant environmental impacts.*
- **EU (Environmentally Unsatisfactory)** The review has identified adverse environmental impacts that are of sufficient magnitude that EPA believes the proposed action must not proceed as proposed. The basis for an environmentally unsatisfactory determination consists of identification of environmentally objectionable impacts as defined above and one or more of the following conditions:
 1. *The potential violation of or inconsistency with a national environmental standard is substantive and/or will occur on a long-term basis;*
 2. *There are no applicable standards but the severity, duration, or geographical scope of the impacts associated with the proposed action warrant special attention; or*
 3. *The potential environmental impacts resulting from the proposed action are of national importance because of the threat to national environmental resources or to environmental policies.*

RATING THE ADEQUACY OF THE DRAFT ENVIRONMENTAL IMPACT STATEMENT (EIS)

- **1 (Adequate)** The draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.
- **2 (Insufficient Information)** The draft EIS does not contain sufficient information to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the proposal. The identified additional information, data, analyses, or discussion should be included in the final EIS.
- **3 (Inadequate)** The draft EIS does not adequately assess the potentially significant environmental impacts of the proposal, or the reviewer has identified new, reasonably available, alternatives, that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant

environmental impacts. The identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. This rating indicates EPA's belief that the draft EIS does not meet the purposes of NEPA and/or the Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS.