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Subject: Comments on NUREG-1811

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Gentlemen:

Attached are my comments (in pdf format) on the North Anna Draft EIS.
Please contact me if there is any problem reading the file.

12/10/04

Thank you for your attention.

69 FR 71854

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SISP Review Complete

Template : ADM-013

E-RIDS = ADM-03

Add J. Cushing (JXC9)

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February 25, 2005

Chief, Rules and Directives Branch
Division of Administrative Services
Office of Administration, Mailstop T-6D59
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Re: North Anna ESP Permit and DEIS

Thank you for the opportunity to review and comment on the DEIS.

In preparing these comments, I have tried to follow the section numbers in the DEIS but since many items come up in several parts of the document, the comments should be considered to apply to all such occurrences. Furthermore, I apologize if comments may be referenced in the wrong section (for example, comments on impacts are given with cites to sections on the existing environment).

In general, the North Anna document does not conform to the standards for a NEPA-compliant DEIS.

1. I could not find in the DEIS a definitive statement of the proposed project's net electrical output. How can one assess the cost/benefits without this core data?
2. I could not find in the DEIS a mention of whether the proposed project would be a regulated rate-based plant or a merchant plant. How can a Dominion customer assess the cost/benefits without this core data?
3. The Executive Summary page xxi line 38 states that the ESP application (and thus by extension an EIS on an ESP) must address "site safety, environmental impacts, and emergency planning". Complete information on all three of these points is lacking in the EIS.
4. Abstract page iii line 10 et. seq. states "that the proposed action does not include any decision or approval to construct or operate one or more units". This is misleading since a lot of construction is permitted by the ESP. To the layman it seems that all but the nuclear reactor itself could be permitted by the ESP.
5. Page 1-1 states that the safety characteristics and emergency planning are to be analyzed separately from the EIS process. NEPA clearly states that an EIS is required for "any major federal action significantly affecting the quality of the human environment". Since safety and emergency planning are elements of the human environment, a NEPA EIS should address these points directly. The EIS is intended to be a primary source of impact information (both

positive and negative). Besides the legal shortcomings of the current approach, how can the public and local governments be well-informed about the project if the basic data, analysis, and conclusions are spread across a variety of proceedings? This unfairly disenfranchises stakeholders.

6. Page 1-3 states that the ER does not need to include discussion of energy alternatives. A NEPA-compliant EIS, on the other hand, does need to.
7. Page 1-3 states that the EIS does not include an assessment of the benefits of the proposed action. It is thus not a NEPA-compliant EIS.
8. Page 1-5 line 28 mentions the North Anna Dam. Shouldn't an analysis be done and included herein on the safety and environmental impacts if the Dam is breached?
9. Page 1-2 line 41 mentions the thermal capacity of the plant but not the electrical (useful) capacity. This major omission does not allow the reader to determine the efficiency of the power plant.
10. Page 1-6 line 3 states that the proposed fourth plant would use dry coolers. Is there an operating nuclear plant in the U. S. that has demonstrated this technology is appropriate and safe for such a large thermal load? If not the technology risks should be assessed and discussed herein.
11. Page 2-1 line 24 mentions that I95 passes within 16 miles of the site. Later sections do not adequately detail the impact on I95 during upset conditions at the plant or upset conditions on the road. The DEIS fails to demonstrate that a plant upset would not adversely impact I95 or US1 which is THE major north-south corridor in the Mid-Atlantic region.
12. Page 2-1 talks about a 50-mile radius but in other parts of the document different radii are used (see for example Figures 2-3, Table 2-1). A consistent area or areas should be used throughout the document. For example, a 15 mile radius might be the HIGH area of impact, a 50 mile radius (which would include Richmond) might be MEDIUM areas of impact, and an 80 mile radius (which would include DC) might be a LOW area of impact. For each parameter addressed in the DEIS the impacts in each area of impact should be defined. Impacts on DC must be addressed.
13. Page 2-5 line 1 states that the Lake Anna Special Plan is "final". Please verify this statement. Furthermore, it would be useful to state whether the Plan addresses nuclear expansion in the region and/or nuclear evacuation plans. There may be a disconnect between local planning and the proposed project.
14. Along the lines of comment 12 above, Page 2-5 line 10 defined "the region" as within a 50 mile radius but provides no basis for why that area was

selected. In this comment I also noted that DC is generally considered part of the region.

15. Page 2-5 line 30 rightfully states that “the land adjacent to Lake Anna is becoming increasingly residential as the area is developed”. No new transportation routes (roads or railroad lines) or new industrial activities are currently planned in the vicinity...” The combination of increased population without increased transportation for emergency egress/ingress could be a recipe for disaster even without the proposed nuclear expansion. This DEIS statement itself is enough basis to reject the later conclusion that impacts on transportation and the human environment are small.
16. Page 2-7 line 26 lists a variety of local planning documents. What do these plans say about nuclear material transport, nuclear material storage, power generation facilities, nuclear waste storage, and nuclear waste transport through the jurisdictions? Simply listing the local planning documents does not define the current planning environment against which the proposed action is to be judged as an overlay. As stated in comment 13, there are disconnects between local planning and the proposed project.
17. What is the current status of Dominion’s VDEQ certification as discussed on Page 2-8, line 16?
18. Page 2-9 line 1, Sections 3.3, 4.1.2, 5.1.2, 5.8.4, etc. discuss transmission access, a critical component of determining site suitability. The document asserts that no transmission expansion would be required at any time any place within the region within twenty years after receipt of the ESP and that the entire electrical output of two new nuclear generators can be transmitted.

I have three problems with the approach: (A) The conclusion is suspect – rules of thumb (no details where given on the line configurations) indicate that the three lines would have a combined capacity of about 1,750 MW so the lines would be above capacity with the four nuclear units. (B) The methodology is flawed – the EIS says that the line capacity is available and that the load flow study (to verify the assertion) would be done later!! That is not a scientific approach suitable for a DEIS. If the load flow study is done later (or conditions on the line change) and it is determined that additional lines are required, the DEIS conclusions about the site would be voided. (C) The “bubble concept” requires that any new transmission lines be analyzed in the DEIS.

If Dominion stands by its assertion that no new transmission is required, Dominion could stipulate that as a condition of the ESP. Otherwise, a detailed transmission assessment and a study of the related impacts must be done now and incorporated into the DEIS. This should include a 20-year load flow forecast.

19. Page 2-9 line 15 discusses "the region" and it fails to mention that Fredericksburg is within the radius drawn. Was Fredericksburg considered in other parts of the analysis?
20. Table 2-1 shows the Land Use in four nearby counties. On this and other measures, the DEIS review of the Existing Environment should include a forecast of the conditions over the twenty year life (since the timing for the action is uncertain) of the EPS as the baseline. Given the rapid population growth in the area, the 2002 data cited is already obsolete and huge changes are already forecast for the region even without considering the proposed project. Spotsylvania, for example, is one of the fastest growing areas of the State. If the DEIS showed current conditions and forecasts for say 5, 10, 20 year intervals as the baseline, the impacts of the project could be put into better perspective.
21. Table 2-1 shows data for four counties. As mentioned in our comment #12, this is inconsistent with discussion of a "region" of study.
22. Page 2-11 mentions that the summers are hot and humid. What is the suitability of dry coolers (for the proposed Unit 4) to this climate? This could be problematic given the statement on Page 2-13, line 15 that relative humidity is not measured at the site.
23. Page 2-12 line 4 confirms that the prevailing winds are from the south-southwest. This is just one reason that impacts on Fredericksburg and the DC metropolitan area should be assessed.
24. Page 2-13 line 15 states that relative humidity is not measured at the site. Regional warming of the Lake contributes to microclimates, increased humidity, and intermittent ground fog. This parameter should be measured.
25. Page 2-13 line 27 indicates that heavy fog is an issue at the site. The increased warm water from the proposed project would contribute to increased heavy fog during some cooler days. The impacts to traffic from this occurrence should be addressed in the DEIS.
26. Page 2-13 line 31 discusses that severe weather may occur in the area. These weather events can contribute to power outages and disruption of road access. Increased generation of power from a few large power plants in one location does nothing to improve regional system transmission stability whereas decentralized generation would offer that benefit.
27. Page 2-14 line and other parts of the report use inconsistent meteorological reporting periods and thus an inconsistent data set.

28. Page 2-14 line 14 reports on storms during the period from January 1950 through July 31, 2003. This is an arbitrary time period which does not include Hurricane Isabel, for example.
29. Page 2-25 line 25 states that good data is available from 1/1/96 to 12/31/01 yet line 32 states that only a portion of this interval was used for the DEIS analysis data. Why? Furthermore, the use of a three year data set is arbitrarily low.
30. Page 2-15 line 36 states "The NRC staff expects that the current monitoring system would remain operational". The applicant should be required to stipulate to this and add additional monitoring (for example, relative humidity) as may be required.
31. The small data set cited in 29 is especially problematic given that it is used for the radioactive dispersion assessments (Page 2-16, line 5).
32. Although there is assessment of design-basis accidents and routine releases, no assessment of worst case releases is included. This data would be important for the public and local governments and should be included.
33. Page 2-18 line 18 states that this DEIS tiers off the preoperational environmental radiation monitoring program. Since the two units have been operational for some time, the baseline should be re-established via a new study.
34. Page 2-18 line 33 states that the NRC concluded that radiation doses were small. Since a DEIS is intended to be a public document, data of this type should be summarized and included in the DEIS along with the staff conclusions derived there from.
35. Page 2-20 line 9 states that units 1 & 2 have "likely" added to evapotranspiration. Since a DEIS is intended to be a public document, data of this type should be summarized and included in the DEIS along with the staff conclusions derived therefrom. If actual data is not available then the formulae or methodology for prediction should be included.
36. Page 2-21 line 31 is very troubling. It states that "it is not possible to create a reliable water budget for Lake Anna". How then, can any of the impact forecasts be reliable?
37. Page 2-21 line 40 discusses that limited data is available. Why have no dye experiments been done and the information used? Since hydrology is a key *site characteristic* and not an operating parameter, deferring velocity flow measurements to the CP/COL stage is not good science or proper EIS procedure.

38. Page 2-22 line 30 mentions other surface water users. Have these entities been directly consulted?
39. Page 2-22 line 41 states that there is "limited projected development in the three upstream counties" which includes Spotsylvania. This statement, and therefore any conclusions drawn from it, is false. The February 23, 2005 Free Lance Star reported that Spotsylvania is one of the 20 fastest growing counties in the United States!
40. What would be the impacts to the project and the Lake Anna area if the Virginia State Water Control Board designates it as a surface water management area (Page 2-23 line 25)?
41. Page 2-24 line 33 states that the proposed unit 4 is "expected" to use dry cooling towers. Since this is the basis for the entire DEIS, Dominion should be required to stipulate to this approach.
42. Page 2-24 line 38 states that "there are no site-specific data available for the chemistry of the groundwater underlying the ESP site." Why not? Shouldn't groundwater monitoring wells, water sampling, and chemical analyses be part of the ongoing monitoring of a nuclear power project that stores radioactive waste? Shouldn't baseline monitoring be required now as part of the impact evaluation of the proposed units 3 and 4? This data is clearly on point in evaluating a site as opposed to evaluating its operations (CP/COL).
43. Page 2-25 line 15 states that "many of the same monitoring activities would be continued". The applicant should stipulate now that monitoring activities will be continued and expanded. Preferably, monitoring activities should be detailed as one of the mitigation measures in a DEIS.
44. Page 2-25 line 35 again states that "many of the same monitoring activities would be continued". The applicant should stipulate now that monitoring activities will be continued and expanded. Preferably, monitoring activities should be detailed as one of the mitigation measures in a DEIS.
45. Page 2-27 line 29 discusses wetlands associated with streams and one within the ESP site. What wetland preservation efforts will be done?
46. Page 2-29 lists some of the birds in the areas. Dry coolers may emit high-pitched sounds. What are the impacts on avian and terrestrial species?
47. Page 2-31 line 30 mentions that Dominion has cooperated with Ducks Unlimited and the Audubon Society to allow informal monitoring. Has the NRC consulted directly with these groups?

48. Page 2-31 line 31 states that the "NRC expects Dominion to work with the State on development and implementation of any required monitoring programs". The applicant should stipulate now which monitoring activities will be implemented. Preferably, monitoring activities should be detailed as one of the mitigation measures in a DEIS.
49. Page 2-34 line 6 discusses clams in Lake Anna. What chemical and mechanical control measures against clams and other aquatic organisms are used by Dominion to protect the cooling water intakes and outflows? What assurances are there that these organisms will not interrupt the flow of necessary cooling waters? The discussion on page 2-39 line 28 is too cursory to be evaluated.
50. Page 2-34 line 6 discusses clams in Lake Anna. How will the increased lake temperature from the proposed units effect the clam populations?
51. Page 2-34 discusses fish populations. What percentage of fish catches and deaths show abnormal anatomy? How does this percentage compare to inland waters around other nuclear plants? How does this percentage compare to inland waters not near nuclear plants?
52. Page 2-36 line 42 states that striped bass are already subject to environmental stress from the existing two units but the later discussion about the impacts of increased thermal loading from additional nuclear units is cursory.
53. Page 2-37 line 15 talks about "professional fishing guides" and line 25 states that the Lake "is heavily fished". What compensation will there be to these business if the impacts of increased thermal loading from additional nuclear units affects their business?
54. Page 2-37 line 24 acknowledges the project proximity to Washington, D.C. yet the document is largely void of discussion of impacts on the D. C. area.
55. Page 2-40 line 11 states that the WHTF "is physically separated from the rest of Lake Anna by a series of dykes". What is the susceptibility of the WHTF to earthquakes, hurricanes, and other natural or terrorist disasters?
56. The socioeconomic sections of the DEIS are unfortunately weak. The DEIS thus cannot be used as an effective decision-making tool.
57. The lack of analysis and discussion of security against terrorist threats is a major omission. This subject is clearly part of today's "human environment". It is ironic that on the morning of the Louisa public hearing that the federal government announced that the U. S. is still the target for such acts yet the ESP process seems to ignore any analysis and disclosure on this subject.

58. The lack of detailed safety discussions in the socioeconomic sections is a major flaw in the ESP process. Thus the DEIS cannot be effectively used as a decision-making tool.
59. Page 2-45 line 16 states that the “impact area for the analysis” includes only the counties of Henrico, Louisa, Orange, and Spotsylvania and the City of Richmond. This area is too small because likely and potential impacts exceed as far out as 80 miles from the site. This area is arbitrary and inconsistent with other study areas used in the DEIS (see comment #12).
60. The demographic data used in section 2.81 on Page 2-45 is outdated and inaccurate. Spotsylvania County, for example, has grown 24% in the last five years!
61. As stated in comment #20, a population forecast through 2026 should form the baseline of the existing environment. The project could then be overlaid on this forecast to assess impacts at different time intervals.
62. The use of population radii in Section 2.81 is good. However inconsistent radii are used throughout the section so comparisons (for example of stable and transient populations) are difficult.
63. Page 2-48 mentions Paramount’s Kings Dominion. Have they been directly consulted about the likely impacts of the proposed project on their facility and its use?
64. Page 2-48 states that Kings Dominion usage rates “could” slow in the future. They easily “could” increase or remain stable, depending on the regional economy, the success of the Kings Dominion’s marketing efforts, and any impact that the proposed project would have on the region.
65. Page 2-54 line 41 cites a 2002 study that Capital One is one of the largest private employers in the area. How have well-publicized job cuts there since 2002 changed this rating?
66. I appreciate the section on Environmental Justice in plant siting. How does the conclusion reached therein mesh with the statement on page 2-55 line 29 that Louisa County (where the project would be sited) has the second highest poverty rate and second lowest median income?
67. Page 2-55 states that NAPS has been economically beneficial to Louisa County but does not cite any data to quantify this impact.
68. Page 2-55 states that Louisa County would like to lessen its dependence on NAPS through diversification of the local economy. The proposed project

would be counter to this local goal. What mitigation measures is the applicant proposing to foster the County's diversification goals?

69. What mitigation measures is the applicant proposing to provide direct economic benefit from the proposed project to those neighboring counties that do not receive tax revenues?
70. Page 2-57 line 9 states that "there are no growth restrictions in Spotsylvania County". Please define this phrase. The County has zoning and other restrictions.
71. Page 2-57 line 32 mentions that there are 32 counties within a 50 mile radius of the project. It is not clear whether this 50 mile radius is the subject area for this part of the analysis. As stated in comment #12, consistent subject areas should be used.
72. Page 2-57 line 34 acknowledges that there are only two major freeways in the area. The impact on these thoroughfares and their feeder roads during an evacuation is not really addressed in Sections 4-7.
73. Along the lines of the prior comment, Sections 4-7 does not address the impacts to the commuter roads listed on page 2-58 line 6.
74. Page 2-58 line 13 acknowledges that the Thornburg area is getting congested. This is a major route to/from Lake Anna and there currently are no funds dedicated to the needed improvements.
75. The traffic discussion on pages 2-59 and 4-25 regarding Spotsylvania roads is hard to understand and I am familiar with the local road network and plans. Presently, Courthouse Road is 208, not the Spotsylvania Parkway. The Spotsylvania Parkway is significantly north of route 606.
76. Section 2.8.2.5 on Housing and the related parts of Sections 4-7 do not assess the impacts of the proposed project on housing values in the Lake Anna area.
77. The assumption on page 2-62 line 36 that temporary housing for refueling workers is as dispersed as for permanent employees is unsubstantiated. Furthermore, if four units are operational, the potential for overlap of refueling outages increases and thus the possibility that significantly more than 700 temporary workers would be required at one time.
78. The "Police, Fire, and Medical Facilities" section on page 2-68 is substantially flawed. It states that there are TWO hospitals in Spotsylvania when there are NONE.

79. The lack of full-time hospitals and fire/rescue facilities in the immediate Lake Anna area creates a high potential for serious impacts from an accident at the project.
80. Page 2-72 line 26 mentions that some undisturbed areas have some potential for cultural resources. I was unable to find in the DEIS a statement that these areas would be examined and cleared prior to any site work occurring there.
81. The proxy plant approach that is used to define the Plant Parameters in Section 3 and elsewhere is hard to follow. Min, average, and max values for each key parameter should be clearly identified.
82. What is the rationale for not using the same plant values in the DEIS and the safety review (Page 3-3 line 18)? It seems like bad science.
83. What is the rationale for not using the PPE in the transportation analysis (Page 3-4 line 37)? Mixing methodologies weakens the conclusions that can be drawn.
84. Where data is referenced from another document like in Page 3-5 line 31, a summary should be included in the DEIS.
85. It would be helpful to provide comparisons for Plant Parameters to the existing two units.
86. What is the capital and operating cost associated with the dry coolers (Page 3-7 line 22)?
87. Page 3-7 line 27 refers to the "PPE concept" to define the boundaries of liquid radioactive effluents and system performance but no summary of the data is included.
88. The conclusion of Section 4.1.1 is that the Construction phase would only have "SMALL" impacts (defined on page xxii as "not detectable or so minor that they will neither destabilize nor noticeably alter any attribute..."). This is obviously false for a project with a capital cost of greater than \$500 million and with about 5,000 construction jobs in a largely rural region.
89. Page 4-4 line 9 states "potential" mitigation measures. The DEIS should specify the actual mitigation measures to be used which should be stipulated by the applicant.
90. Section 4.2.2 states that Construction impact on transportation is SMALL. The text ("2800 vehicle trips per day", roadways would experience congestion, "five existing roads are expected to be impacted") does not support this conclusion and seems to indicate a LARGE local impact.

91. Section 4.2.2 does not include detailed background transportation counts or LOS projections which are typically used to assess transportation impacts. The suggested methodology is to do a 20-year traffic forecast as the baseline and then overlay the 2800 vtpd at several instances to assess the impact.
92. Since Section 4.3.1 line 9 states that “Dominion did not provide information on wetlands in its ER” how can the DEIS conclude that the impacts of hydrological alterations would be SMALL? The text discusses numerous possible impacts.
93. Section 4.3.1 line 9 states that “Dominion did not provide information on wetlands in its ER”. That does not relieve the NRC as lead agency from its responsibility to collect, analyze, and report information on wetlands in the DEIS. This information must be included since Page 2-27 line 29 mentions that there are wetlands in the vicinity.
94. Page 4-8 line 15 discusses possible third-party permit conditions that “may” restrict the timing of certain construction activities. What if these permits are not imposed by the other agency? The applicant should stipulate here the mitigation measures to be applied.
95. How will the increased temperature of the lake contribute to mosquito populations, particularly those that are West Nile disease carriers?
96. Section 4.5.1.1 fails to account for the fact that the construction and new plant operation will provide increased access to the site which could increase the potential for accidents and terrorism.
97. Page 4-17 line 11 discusses a ten mile radius from the site without providing a rationale for why this radius was selected. As suggested in comment 12, I believe that rationales should be provided and several radii should be used for all parameters studies.
98. The conclusion of SMALL impact for Section 4.5.1.3 is not supported by the text or the actual situation in the region. There is little to no funding for road expansions. The VTRANS 2025 report shows that gridlock is *expected* on major roads and at major interchanges.
99. In Section 4.5.1.3 local officials are cited as being of the belief that road alterations need to be evaluated “prior to construction”. This does not mean that this issue should be deferred to the CP/COL stage – local access and the impacts on transportation are clearly site related issues and should be thoroughly evaluated at this time.

100. Section 4.5.2 ignores the strain that a new populace would place on the limited health care resources in the region. This is a major socioeconomic factor and should be thoroughly analyzed.
101. Section 4.5.3.1 should include typical salary information for the jobs to be created.
102. Page 4-22 line 17 seems to indicate that the NRC consulted primarily with Dominion in assessing whether there is a sufficient labor force. Independent analysis should be done especially since the residential and commercial construction markets have taken off since the December 2003 survey.
103. The conclusion of SMALL impact for Section 4.5.3.2 is not supported by the text or the actual situation in the region. There is little to no funding for road expansions.
104. Page 4-24 line 9 states that mitigation measures would be required. These measures should be detailed now and included in the DEIS.
105. The Spotsylvania road improvements on page 4-25 line 7 are not fully funded and thus may not occur or may be delayed.
106. There is no planned Spotsylvania Turnpike exit from I-95 (Page 4-25 line 36).
107. Page 4-25 line 39 acknowledges that the I-95/606 interchange is congested at "LOS D or worse". Line 13 acknowledges that SR208 from Blockhouse Road to Lake Anna (about 12.5 miles) is a minor two-lane road. Increased construction usage will have major impacts on these roads. If an evacuation is required during the construction interval when additional personnel are on site, the impact would be staggering.
108. Section 4.5.3.3 is almost useless without including indicative numbers for the capital and operating costs and the likely tax contributions that would result.
109. Section 4.5.3.3 should consider the potential for loss of property tax revenue from the residential sector in the area if the proposed project results in a devaluation of real property.
110. The conclusion of SMALL impact for Section 4.5.3.5 is not supported by the text or the actual situation in the region.
111. What is the estimated number of new residences that would be required in Spotsylvania to serve the construction (and later operating) personnel? If

these persons have school age children, this would add to the growing education demands.

112. Why not stipulate the need for cultural resource assessments now (Page 4-35 line 37)?
113. The mitigation measures mentioned on page 4-37 line 35 should be stipulated to by the applicant. "Developing a plan" at a later stage as mentioned in Section 4.10 is not adequate.
114. Why isn't the independent spent fuel storage facility underground (Page 4-40 line 10)? This would help protect it for air attacks.
115. The dose assessment on Page 4-40 line 28 ignores potential overtime hours.
116. Why were samples taken to the west when the prevailing winds are to the northeast (Page 4-41 line 30)?
117. Section 4.9.4 gives a mean forecast. What about potential upset conditions? Shouldn't a worst case analysis be included for low-probability events?
118. The measures outlined in section 4.10 are a good start but additional detail is required now to understand the likely site impacts.
119. Page 4-44 line 32 change the word "may" to "would".
120. Page 4-46 line 1 states that Dominion would post a \$10 million guarantee. Given the recent risks in the utility industry, Dominion should be required to post a Letter of Credit from a bank rated A or better in the event that its own credit rating drops below investment grade.
121. The NRC and applicant should stipulate that there will be no extension of the 20 year ESP window under any circumstances. Otherwise, statements like those on Page 4-47 line 2 are worthless and the DEIS analysis becomes even more detached from actual conditions.
122. Page 5-1 line 13 states that the operating period for the proposed project would be 40 years. Is the applicant prepared to stipulate that? If not, would another EIS be required for an extension of the COL?
123. Page 5-1 line 40 states that "any growth would be managed" because the counties have land-use plans. Just because the counties have plans, doesn't mean that growth is managed. Furthermore, at least for several of the adjacent counties, the plans do not specifically contemplate the proposed action.

124. Page 5-2 line 35 mentions that air quality impacts of "routine" releases would be limited. The document does not include a good analysis of the "non-routine" releases. It would be helpful to understand the potential magnitude of these releases even if they have a low probability of occurrence.
125. Section 5.3 does not fully address downstream impacts of the proposed project.
126. Page 5-4 line 20 references a water budget model yet on page 2-21, the document states that a reliable water budget model does not exist.
127. Page 5-4 line 21 seems to infer that during normal years the water level in the Lake would be acceptable. What about during drought years?
128. Page 5-4 line 25 refers to the drought as a "climatic anomaly" -- droughts are normal occurrences over time.
129. Page 5-5 line 15 discusses a methodology that was used to estimate evaporation rates. Was the higher Lake temperature to be expected from the proposed Unit 3 included in this analysis?
130. Page 5-5 discusses a very weak methodology for assessing water impacts. Line 16 acknowledges that the method has the potential for significant error. Given the importance of the Lake to the region, a more rigorous analytical method should be used similar to that used for FERC hydro applications for inflows.
131. What was the length of the dataset from which the data was extracted for the analysis on Page 5-5 line 33?
132. Were the Section 5.3 methodologies that were developed back-tested against actual water levels? What was the level of significance of the match between the forecasts and actual levels?
133. Page 5-6 line 22 is missing data in the parenthesis "9.7 BTU/hr" is not correct).
134. The PPE methodology discussed on page 5-6 line 39 is too simplistic. Since both ambient and water temperatures are hotter during the summer, a seasonal analysis should be done. This would also permit better analysis of the temperature impacts on aquatic species since their activities can be seasonal (Section 5.4.2.7 states that cool months would have SMALL impacts on striped bass).
135. The impact analysis deferral on page 5-7 line 11 is objectionable.

136. The data presented does not support a SMALL impact rating on page 5-7 line 19. The very fact that Unit 4 would be designed to use air coolers indicates that the water impacts are much larger.
137. Why wasn't actual site meteorological data considered for the analysis mentioned on page 5-8 line 22?
138. What duration of meteorological data was used for the analysis mentioned on page 5-8 line 22?
139. Page 5-8 line 41 states that the Lake level is being managed to maintain a stable level of 76.2 meters yet the modeling results on Page 5-9 predict a lower level for all four scenarios mentioned.
140. Page 5-9 line 10 references a water budget model yet on page 2-21, the document states that a reliable water budget model does not exist.
141. Given a MODERATE impact rating on Page 5-10 line 10, how can the statement that no mitigation is warranted be correct? The proposed facility, if permitted, should be required to have design and operational mitigation to minimize the water impacts. These mitigation measures should be spelled out in the DEIS.
142. Dry coolers may emit high-pitched sounds which could affect certain wildlife. The frequency characteristics of the noise should be assessed in addition to the sound pressure levels in Section 5.4.4.
143. What is the basis for the statement on Page 5-11 line 32 that collisions would be rare.
144. How can a 20% change (52% from 44%) in the low flow conditions not have noticeable downstream impacts?
145. Delete the phrase "if additional power from Units 3 and 4 is transmitted through this system" from the end of Section 5.4.1.4.
146. How can a 300% increase in the number of fish impinged (422,000 per year from 182,000) be considered a SMALL impact in Section 5.4.2.2?
147. Although Section 5.4.2.3 concludes that entrainment impacts would be SMALL, the *cumulative* effects of impingement, entrainment, radiation, and other aquatic hazards should be assessed and described (Section 5.4.2.7).
148. The assumption in 5.5.1.3 that "any needed upgrades in the road system would have been made" is flawed. This assumption leads to the DEIS

conclusion that road impacts are SMALL. Funds for transportation in Virginia are seriously constrained. The analysis should be re-done without this assumption.

149. Ground fog is a serious problem along Route 208 in the vicinity of the Lake at times (Page 5-37). This problem will be worse if the Lake waters are heated up.
150. What microclimatic temperature increases and secondary impacts could result from the dry cooler operations (Page 5-38 line 3)?
151. Change the word "could" to "would" on Page 5-18 line 18.
152. Change the word "could" to "would" on Page 5-41 line 18.
153. Sections 5.5.3.1 and 5.5.3.2 do not consider evacuation impacts.
154. Page 5-42 on taxes mentions utility deregulation. Would the new units be merchant plants or rate-based?
155. The sentence starting on Page 5-43 line 39 is too speculative and should be deleted.
156. Sections 5.5.3.4 and 5.5.3.5 should assess the impact on recreation and local housing if there is a nuclear accident at the facility.
157. Section 5.5.3.5 should assess the impact on local housing values from the proposed project.
158. The section in 5.5.3.6 on Police, Fire, and Medical Services is flawed. It states that patients travel to Spotsylvania for hospitalization, but in reality is no hospital there.
159. The fact that there are no hospitals in the three closest counties (Orange, Louisa, and Spotsylvania) should weigh heavily against the proposed facility. How far is the nearest hospital?
160. Sections 5.9 and 5.10 do not provide sufficient analysis on the impact of upset conditions. Even though these are low probability occurrences the impacts would be large.
161. The paragraph on page 5-70 line 14 would benefit from simpler language.
162. More than three years of meteorological data should be used in Section 5.10.1.

163. "The probability of a severe accident without the loss of containment" mentioned on page 5-74 line 22 is just slightly less than the probability of winning the Lotto South jackpot.
164. The mitigation measures listed on page 5-84 should be stipulated to.
165. Section 6.0 should include a statement of the government subsidies and tax incentives that are provided for nuclear fuel production, fuel and waste transport, and waste disposal.
166. The DEIS should include a statement of the amount of government funds that are available for the North Anna ESP process.
167. No credence can be put into Section 6.2.4 and the conclusion that the impacts are SMALL given the starting statement of "considering the uncertainties in the data and computational methods".
168. Section 6.0 should include an analysis of nuclear waste disposal.
169. The introduction to Cumulative Impact section states on Page 7-1 line 22 that "if a resource is regionally declining or imperiled, even a SMALL individual impact could be important if it (sic) contributes to or accelerates the overall resource decline." This situation certainly applies to regional transportation and roads, yet this is ignored in the DEIS.
170. The list of alternatives in Section 8 should include the following:
 - a. Life extension of the existing two North Anna reactors
 - b. Retirement of the existing two North Anna reactors
 - c. Constructing the new reactors and radioactive material storage underground to increase security against an air attack
 - d. Non-nuclear generation sources
171. It is hard to reconcile the statement on page 8-2 line 36 that "WHTF conditions could extend into approximately 19 percent of the main body of the lake" with the SMALL impact designation for this parameter.
172. The lack of significant variance among the alternatives in Table 9-1 make the impact analysis process and quantification scale suspect.
173. In Table 10-3 the impacts listed for the No-Action Alternative should be "NONE" not "SMALL".
174. An EIS is supposed to be prepared by an independent multi-disciplinary team. To what extent did the NRC commission any independent environmental reviews above the data presented in Dominion's ER? This is not clear from Appendices A and B and the cited references.

175. For a project of this magnitude it seems that one public hearing in one location is insufficient to provide the public an opportunity to get educated and provide comments. I know that I personally was unable to attend the revised hearing date due to work requirements. I again restate my request for another public hearing on the DEIS.

176. Based on the above review, I believe that the document is substantially flawed and request that these comments and others be fully addressed and that another DRAFT EIS be released. Unless such an action is taken, concerned citizens and local governments (and indeed the NRC since it is supposed to be relying on the DEIS for decision-making) cannot make informed decisions about the proposed project.

177. The flaws in the document do not provide the scientific, legal, or policy background to support a finding to recommend the ESP.

I am available to clarify any of these comments. Thank you for your consideration.

Sincerely,

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