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Date: Tue, Mar 1, 2005 12:40 PM
Subject: Comments on EIS for North Anna ESP (NUREG-1811)

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To Whom It May Concern:

Attached you will find a PDF ("pcommentsnaeis") containing the comments of Public Citizen on the NRC's Draft Environmental Impact Statement (Draft EIS) for an Early Site Permit (ESP) at the North Anna ESP Site (NUREG-1811).

12/10/04

69 FR 71854

Public Citizen, in conjunction with the Nuclear Information and Resource Service (NIRS) and the Blue Ridge Environmental League (BREDL), has been admitted as a party to the licensing proceeding for the North Anna ESP. As a formal participant with standing in this proceeding, we hope that our comments and recommendations on the Draft EIS are considered seriously and taken into account before the NRC issues its Final EIS on the North Anna ESP.

Please enter these comments into the official record on this proceeding.

Sincerely,

Joseph P. Malherek
Policy Analyst, Public Citizen's Critical Mass Program

Michele Boyd
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SISP Review Complete
Template = ADM-013

E.RIDS = ADM-03
 Add J Cushing (JXC9)
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Joan Claybrook, President

March 1, 2005

Chief, Rules and Directives Branch
U.S. Nuclear Regulatory Commission
Mail Stop T6-D59
Washington, D.C. 20555-0001

Re: Comments on the Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site (NUREG-1811)

To Whom It May Concern:

Enclosed you will find the comments of Public Citizen on the NRC's Draft Environmental Impact Statement (Draft EIS) for the Early Site Permit (ESP) at the North Anna ESP Site.

Public Citizen, in conjunction with the Nuclear Information and Resource Service (NIRS) and the Blue Ridge Environmental League (BREDL), has been admitted as a party to the licensing proceeding for the North Anna ESP. As a formal participant with standing in this proceeding, we hope that our comments and recommendations on the Draft EIS are considered seriously and taken into account before the NRC issues its Final EIS on the North Anna ESP.

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Michele Boyd
Legislative Director, Energy Program

Joseph P. Malherek
Policy Analyst, Energy Program

[Enclosure]

Overall comments

Arbitrary Distinction between ESP and COL

The purpose of an Early Site Permit (ESP) process is supposedly to “assess whether a proposed site is suitable should the applicant decide to pursue a CP [construction permit] or COL [combined license]” (DEIS, page xxi). Yet, this Draft Environmental Impact Statement (DEIS) fails to consider or to fully acknowledge numerous environmental issues that indicate that the North Anna site is not suitable for additional reactors. It does not appear that the ESP really indicates anything about site suitability when analyses to determine environmental impacts or decisions on how to mitigate those impacts are put off to the COL stage or are to be made by the state after the NRC has already granted the ESP.

Moreover, the need for a “Site Redress Plan” (Section 4.11), which addresses the activities required to return the North Anna site to its present state if infrastructure construction activities are truncated, and the breadth of the facilities that can be constructed under the ESP (listed on page 4-46 of the DEIS) is an indication of the bizarre and arbitrary division between the ESP and the COL processes. Clearly, the specific site and the specific reactor are one in the same project, and the division into the ESP and COL licensing process is completely arbitrary.

Dominion claims that it has made no decisions about building new reactors at North Anna.¹ Yet, an ESP is a “partial construction permit,”² meaning that Dominion would be allowed to carry out large-scale construction operations, including site clearing, stream clearing, and excavation, as well as construction of permanent foundations, intake structures, and outfall structures.³ Moreover, Dominion is leading a consortium that plans to apply for a combined construction and operation license (COL) in 2008. Thus, if granted an ESP, Dominion could be permitted to begin an extensive construction operation while numerous, important issues, such as the need for power and the indefinite storage of additional waste onsite, have not been addressed. Simply declaring that NRC is not required to look at these issues does not make them go away.

Water Resources

Inadequate data and evaluation

The DEIS does not sufficiently address whether there is an adequate water supply in Lake Anna for the operation of another once-through reactor. In fact, the necessary in-depth analyses to determine the impacts on Lake Anna or to mitigate those impacts are put off to the COL stage or are to be determined by the Commonwealth of Virginia at a later date – after the NRC has already granted the ESP.

¹ Public Statement by Dominion at the public hearing on the DEIS for North Anna ESP. Rusty Dennen, “NRC hearing airs opinions,” *Fredericksburg Free Lance-Star*, February 20, 2005.

² 10 CFR Part 52

³ 10 CFR 50.10(e)(1)

For example, according to the DEIS, “because of the limited inflow data, it is not possible to create a reliable water budget for Lake Anna directly from inflow and discharge measurements” (page 2-21, line 31). Nor have water velocity measurements within the lake been recorded. Yet, the DEIS makes it clear that these data are “important for both understanding the hydrodynamics of the lake and to calibrate numerical models of fluid and heat transport process in the lake” (page 2-22, line 2). In place of velocity measurements, NRC Staff estimated the inflow using data from an adjacent drainage basin and outflow based on the operating rules for the Lake Anna Dam. NRC should require Dominion to provide the necessary temperature and velocity measurements for the Final EIS, and not wait until the COL stage (page 5-7, line 19). With such inadequate data about the lake’s hydrology, how can NRC Staff conclude that the hydrological impacts of another once-through reactor on the lake will be “small” (page 5-7, line 18)?

Reduced lake levels (Sec. 5.3)

The two existing reactors on Lake Anna withdraw 1.9 million gallons of water per minute. While most of the water that is withdrawn from Lake Anna is returned as hot water in the southern portion of the lake, the Draft EIS does not state the consumptive use – how much water is lost from evaporation – of the existing reactors. This information is crucial for understanding the additional impact from the two proposed reactors and should be explicitly provided in the Final EIS.

The proposed once-through reactor would withdraw another 1.14 million gallons of water per minute, and would result in an additional 11,700 gallons of water lost per minute (adding another 1% to the evaporative losses). Even a several percent loss of water can have a large impact on the lake. According to the Draft EIS, “even making normal minimum releases of 1.1 m³/s (40 cfs) from Lake Anna will result in deficits during July, August, and September” (page 5-4, line 15). In drought years, the rate of evaporation and the reduced flow into the lake would have an even more serious impact on both the aquatic life in the lake and on the people living around the lake. In the 2002 drought, the water level dropped to 245 feet above mean sea level, which is 5 feet lower than normal. Boats could not be launched from ramps on the lake, and the backyards of homes around the lake were mudflats. The impact on property values from increased periods of lower lake levels should be analyzed in the Final EIS.

According to the Draft EIS, the two existing reactors must be shut down when the water decreases below 244 feet above mean sea level, because the water level would become too low for the intake pipe. Had a third once-through unit been operating in October 2002, the lake level would have dropped to 243.4 feet above mean sea level and the reactor would have had to be shut down. In its application, Dominion has asked to allow the proposed third reactor to operate until the lake level drops down to 242 feet above mean sea level. At the February 23, 2005 meeting between NRC and Dominion, Dominion stated that it has lowered the intakes for Units 1 and 2. Please indicate how Dominion has modified the intake pipes in the Draft EIS. Does Dominion intend to request that the shutoff point for the existing reactors be lowered to 242 feet above mean sea level?

The NRC Staff does not oppose the proposal of lowering the shutdown point for Unit 3, because the water level decreases slowly and thus “the facility would have adequate time to prepare for any shutdown caused by low lake elevations” (page 5-7, line 7). Yet, the NRC Staff acknowledges that “operation of Unit 3 would increase the duration of periods during drought conditions when the Lake Level Contingency Plan would be applied” (page 5-9, line 34). The Final EIS should include a full analysis of the impacts on the lake and downstream of lowering the level at which the two existing reactors, in addition to the proposed Unit 3, must be shut down. Please justify why lowering the shutoff point would not further increase the impacts on the lake, as well as downstream by lengthening the period of time of low-flow from the dam.

Information and analyses on “operational practices and procedures” for mitigating hydrological impacts (page 5-7, line 10) is crucial for determining whether the impacts can be minimized and should be an integral part of the Final EIS.

Increased temperature in Lake Anna (Secs. 5.4.2.4 and 5.4.2.5)

The addition of another once-through reactor will increase the temperature of Lake Anna, which will affect the striped bass, one of the most thermally-sensitive fish species in the lake. Striped bass prefer temperatures between 65 and 70°F and avoid temperatures above 77-81°F (DEIS, page 5-27, Table 5-7). According to Dominion’s models, the “maximum daily surface temperature” near Thurman Island would reach 95.1°F (DEIS, page 5-28, line 4). The “maximum daily surface temperature,” however, is calculated as an average of the upper 28 feet of the water column. This ignores the temperature gradient, especially in the lower parts of the first 28 feet water column where the striped bass reside. Striped bass are also sensitive the level of dissolved oxygen in the water, but no dissolved oxygen data is presented in the Draft EIS. The selection of temperature and dissolved oxygen is a balancing act for striped bass. In order to make a real assessment of the impact of additional reactors on the striped bass, vertical profiles of temperature and dissolved oxygen within the upper 28 feet of the water column and need to be provided in the Final EIS.

The Virginia Department of Game and Inland Fisheries, which has stocked striped bass annually in the lake since 1972, considers the current striped bass habitat “tenuous.” Although the NRC Staff conclude that the striped bass will be forced “up-lake into areas that provide suitable habitat” for “a three-to-four month period in summer and early fall” (DEIS, page 5-31, line 3), no data was presented that shows that suitable habitat exists in the other areas of the lake. This data should be included in the Final EIS.

If adult striped bass are forced to move to marginal habitat in the northern part of the lake, they could be prevented from feeding normally. Spatial segregation from their forage base and increased metabolic rates could cause loss of condition or starvation. The NRC Staff concludes that the problem can be mitigated by stocking more fish or stocking larger fish. But larger fish are known to be affected by increased temperature, and are often the first to suffer summer “die-offs.” While more fish can be stocked, the potential for large fish greater than 10 lbs (or maybe even fish greater than 6 lbs) is greatly reduced with increased temperatures. It would also be very expensive to

significantly increase the annual stock, and Virginia taxpayers should not be held financially responsible. A cost analysis of the stocking proposals should be included in the Final EIS.

Table 5-7 on page 5-27 does not explain why there are two rows of numbers for bluegill and large-mouth bass. According to a similar table in Dominion's ER (Table 5.3-22, page 3.5.91), the two rows are from different sources. Please clarify this in the Final EIS.

Finally, it should not be necessary to refer to Dominion's Environmental Report in order to make sense of the EIS; the relevant temperature modeling tables should be included in the Final EIS. Please also indicate whether (and if so, how) NRC Staff independently verified Dominion's modeling results.

Reduced flow downstream (Sec 5.3)

Hot water discharged into the lake increases evaporation and thus decreases the amount of water available downstream of the North Anna Dam. In drought years, the amount of water available for downstream use would decrease even further, because there would be significantly less water draining into the lake and higher rates of evaporation. While the minimum flow rate during drought periods is limited to 20 cubic feet per second (20 cfs), an additional once-through reactor would increase the frequency and duration of the low-flow periods from the North Anna Dam. The duration of the low-flow periods (20 cfs) would increase from 5.8 percent to 11.8 percent of the time (ER, Part 3, Table 5.2-3, page 3-5-12). The lowest flow rate at the North Anna dam, which releases only 5.4% of the natural flow, is considered as "severe degradation" according to the Tennant method for flow recommendations.⁴ This evaluation should be acknowledged in the Final EIS.

Since there is less precipitation in July, August, and September, the low-flow period is likely to occur during these months. According the NRC Staff, the reduction in water available to be released from the dam will be another "unavoidable adverse impact" (DEIS, page 10-7, Table 10-2), but it would be avoidable if the proposed third reactor was required to have a dry cooling tower. This option should be evaluated in the Final EIS.

According to the Virginia Department of Environmental Quality, another reactor will mean "nearly perennial condition of severe degradation" every fall. Dominion's own model shows that the minimum flow (20 cfs) is expected to occur 10 years out of the 25-year modeling period with a third reactor. With the two existing units, minimum flow (20 cfs) is predicted in only 3 years out of the 25-year modeling period. This will have a serious impact on the downstream aquatic life, as well as increase conflicts over water use by downstream counties in the future. Yet, there is no discussion of how the increased occurrence of minimum discharge will affect on living organisms downstream. For example, a full evaluation of the potential impacts of reduced or variable discharge on the life history stages of the native Pamunkey River striped bass population is warranted, especially due to the fact that the Pamunkey River population is one of the

⁴ Memo from Joseph P. Hassell to Ellie Irons (Virginia Department of Environmental Quality), January 15, 2004, pages 2-3.

healthiest populations in the Chesapeake Bay ecosystem and is being used for propagation for Chesapeake Bay restoration efforts. The impacts of extended periods of low-flow downstream should be fully analyzed in the Final EIS as an integral part of determining site suitability, rather than simply punted to the Commonwealth of Virginia to address after the ESP decision is made.

Increased fish mortality at intake pipes (Sec. 5.4.2)

Fish and other aquatic life can be killed when caught on the screen of the intake pipe or, for smaller organisms, forced through the intake pipe into cooling water system. With an additional reactor, the number of fish caught, or "impinged," on the mesh screen of the intake pipe would increase by 230%. The number of gizzard shad, the major forage fish, and the number of striped bass killed by impingement would both double. The number of entrained fish larvae would also double, 63% of which would be gizzard shad. The Final EIS should acknowledge that more than doubling the number of entrained larvae would violate the Clean Water Act, which requires the use of best available technology.

Moreover, it is crucial to consider the size and age distributions of the impinged fish in order to understand the impact on the structure and viability of the population. This information should be included in the Final EIS.

The NRC Staff conclude that, because the fish impinged and entrained "most frequently are prolific and exhibit a high reproductive potential, and natural responses of the fish population occur to offset losses," (DEIS, page 5-21, line 11 and page 5-25, line 14) the impacts of impingement and entrainment will be "small." This is nearly word-for-word the conclusion that Dominion provided the NRC regarding impingement in its application (ER, page 3-5-45). In fact, the entire sections on impingement and entrainment are virtually identical to the ER. Please indicate whether (and if so, how) NRC Staff did its own independent assessment of the information that Dominion supplied in its ER.

Shoreline Habitat (Sec. 5.4.1.3)

Dominion's models predict that the flow from North Anna Dam will be reduced to 20 cfs for 11.8% of the time, compared to 5.3% of the time currently. The impact of increasing periods of extreme low-flow at 20 cfs—not only increased periods of flow at 40 cfs—from the dam on downstream habitat should be fully evaluated in the Final EIS.

Water Quality (Sec. 5.3.3)

A full analysis of the water quality impacts should be included in the Final EIS, including the list of effluents and discharge levels for Units 1 and 2 allowed under the current VPDES permit, as well as the list of expected effluents and discharge levels for Units 3 and 4.

Thermophilic micro-organisms (Sec. 5.8.1)

What is the basis for the conclusion that the increased water temperature in Lake Anna caused by the additional cooling structures required for new reactor units at the site would not be sufficient to "create an environment conducive to the optimal growth of

thermophilic organisms,” which can cause primary amoebic encephalitis in humans (DEIS, Sec. 5.8.1)?

Impact on Lake Anna Recreation (Section 5.5.3.4)

This section fails to adequately consider the potential impacts on recreational use of Lake Anna from the operation of additional reactor units at the NAPS, which may significantly reduce the water levels in Lake Anna and, consequently, adversely affect river flow and aquatic life downstream. New reactor units may also have a negative impact on recreational fishing in North Anna through the effects of increased water temperature and impingement/entrainment, where fish and fish larvae are sucked into the water intake apparatus required to cool reactors at the NAPS.

According to the Virginia Department of Environmental Quality (VDEQ), regardless of a drought, the decreased water level necessary for additional units “would adversely affect lake access, and local economic conditions in the process.”⁵ One or two additional units on Lake Anna would reduce lake levels due to increased water withdrawals from the lake, especially in the summer and fall when demand for power and evaporation are higher. This was evidenced during the 2002 drought when the lake level dropped to a mere 245.1 feet above mean sea level, nearly requiring the NAPS to be shut down and preventing the use of most boat ramps (DEIS, page 5-44, lines 9-11).

Recreational fishing use on Lake Anna could also be damaged if the health of fish populations is diminished by the thermal impacts on the lake, as well as increased impingement and entrainment, from additional reactors at the site. These problems, combined with the adverse effects of a reduced river flow downstream from the plant caused by additional reactors, must receive a more thorough consideration in the NRC’s final EIS on the North Anna ESP.

Fuel Cycle and Radioactive Waste

High Level Radioactive Waste

The Draft EIS fails to evaluate the environmental impacts and security threat of indefinitely storing the additional irradiated fuel that will be generated by the proposed reactors onsite. Another reactor or two at North Anna will each create annually between 100 and 150 metric tons additional irradiated fuel to the site. Despite the NRC’s Waste Confidence Decision, the only site under consideration, Yucca Mountain in Nevada, is far from a done deal. Numerous scientific questions remain about whether the site can safely store waste. Moreover, the Department of Energy (DOE) has not yet submitted its license application to the NRC, although the statutory deadline was more than two years ago. DOE was supposed to begin accepting waste in 1998 and is highly unlikely to meet its revised goal of accepting waste by 2012.

Even if Yucca Mountain is opened, the site cannot hold the high-level radioactive waste that will be generated by existing reactors after 2010. Therefore, in addition to the waste

⁵ Letter from Ellie Irons (Virginia Department of Environmental Quality) to Pamela F. Faggart (Dominion), February 10, 2004, page 11.

generated by existing reactors, waste created by new reactors at North Anna would also have to remain onsite for an indefinite period of time. The NRC recently approved an unprecedented 40-year license extension for Dominion to store high-level nuclear waste on site at its Surry nuclear plant near Williamsburg, VA, indicating that fuel can reasonably be expected to be stored at reactor sites for at least that long. The environmental impacts of indefinite storage must be thoroughly evaluated in the Final EIS.

Spent fuel reprocessing

The Draft EIS only considers the “no recycle” option for irradiated fuel management, which treats spent fuel as “waste to be stored at a Federal waste repository,” and does not consider the “uranium only recycle” option, which involves the reprocessing of spent nuclear fuel (DEIS, page 6-3). Yet, the DOE has had significant setbacks in its attempt to attain a license for a federal repository for irradiated nuclear fuel at Yucca Mountain, Nevada (it has not yet submitted its application for the project), and the federal policy banning the reprocessing of spent nuclear fuel far from intractable. In fact, the DOE was granted more than \$67 million in fiscal year (FY) 2005 for the “Advanced fuel cycle initiative,” a research and development program intended to provide technology to “recover the energy content in spent nuclear fuel,” and it has requested \$70 million from Congress for FY 2006 for the same program.⁶ This continued government interest in reprocessing, combined with the failure to establish a national repository for irradiated nuclear fuel, should compel the NRC to consider the impacts of spent fuel reprocessing in the Final EIS.

Depleted uranium

The draft EIS lacks a consideration of the environmental and public health impacts resulting from military applications of depleted uranium (DU), a byproduct of the enrichment process of the fuel cycle. Moreover, there is not a complete consideration of the impacts of managing this substance as a waste. There is no repository established for the permanent disposition of depleted uranium, but the impacts of such a hypothetical facility should be considered.

Uranium milling (Sec. 6.1.2.4)

The Draft EIS estimates that, for the reference reactor-year (a 1000-MW(e) LWR), 1.09 Million MT of raw ore would be required to produce 1200 MT of yellowcake for ultimate use as fuel after conversion, enrichment, and fabrication (DEIS, Sec. 6.1.2.5). Over time, as worldwide uranium ore supplies are depleted, requiring exploitation of less pure deposits of ore, would this ratio of ore to yellowcake increase? If so, would the environmental impacts of mining and milling become greater?

Transportation accidents (Sec. 6.2)

This section and the accompanying Appendix G of the Draft EIS do not give adequate weight and consideration to the possibility and consequences of severe accident scenarios

⁶ U.S. Department of Energy, Office of Management, Budget and Evaluation/CFO, *Department of Energy FY 2006 Congressional Budget Request: Budget Highlights*, DOE/ME-0053 (Washington: DOE, Feb. 2005) 60-63.

resulting from the transportation of spent nuclear fuel. The possibility of extreme accidents, while slight, exists, as evidenced by recent incidents such as the Baltimore train tunnel fire of 2001 and the more recent accident in Graniteville, South Carolina in January, where a violent train crash and release of chlorine killed nine people, sent hundreds to the hospital, and required thousands to evacuate their homes.

Construction Impacts

Impact on Wetlands (Sec. 4.1.1)

Existing wetlands, streams, and woodlands on the North Anna site may be adversely affected by construction activities for the proposed Units 3 and 4 (DEIS, page 4-2, lines 20-23). Dominion's ER for the North Anna ESP observes, "Any work that has the potential to impact a wetland would be performed in accordance with the applicable regulatory requirements." (ER, Sec. 4.1.1.6.2) This is repeated almost word-for-word in the draft EIS at Section 4.1.1. The ER concludes, without supporting evidence, "Therefore, no construction-related impacts on water courses or wetlands would result" (ER, Part 3, Sec. 4.1.1.6.2). Does it necessarily follow that "applicable regulatory requirements" will preclude any negative impacts on wetlands? A more trenchant analysis of the question is deserved in the Final EIS, especially since Dominion provided no information on wetlands in its ER (DEIS, Sec. 4.3.1, line 9). Please explain the mitigation measures that will be employed to achieve this end.

Construction impacts on groundwater (Secs. 4.3.1 and 4.3.2)

The dewatering systems used during construction of the foundation of new reactors and associated buildings would "depress the water table in the vicinity and possibly change the direction of groundwater flow and the available capacity of local wells" (DEIS, Sec. 4.3.1, lines 20-22). What would be the approximate duration of this depression, and how many local groundwater users would be affected, including those users who might have their water diverted from the importation that may be required (DEIS, Sec. 4.3.2, line 35)?

Impact on aquatic ecosystems (Sec. 4.4.2)

According to the Draft EIS, the greatest construction impact on the aquatic environment of Lake Anna would come from the construction of the new cooling water intake structure and channel (DEIS, Sec. 4.4.2, lines 35-36), which would require activities such as dredging that could result in a loss of habitat (DEIS, page 4-12) as well as the possible resuspension of heavy metals left from mining activities. The mining runoff had previously contaminated Contrary Creek and parts of the North Anna River downstream such that virtually no aquatic life existed, and the contaminants may still remain in the region's sedimentation (DEIS, pages 4-12 and 4-13). The Draft EIS notes that any potential impacts from these activities "would be addressed through the Clean Water Act Section 404 permit and Section 401 verification process" (page 4-13, lines 22-24). Is this considered a mitigation measure?

Dredging and other construction allowed under an ESP may also resuspend PCBs, which are known contaminants in Lake Anna. A full analysis of PCBs in the sediments near the site and the impact of construction should be included in the Final EIS.

Water Supply (Sec. 4.5.3.6)

The Draft EIS acknowledges that even without the construction of new reactor units at North Anna, there may not be sufficient water and sewer infrastructure in the region to keep up with the expected growth. Further, a recent drought has exacerbated a shortage in the availability of water supplies in Louisa and Orange Counties, where there are no growth restrictions (DEIS, Sec. 4.5.3.6). Thus, the NRC staff has judged that the construction of new reactor units at the NAPS may have "moderate" impacts (page 4-31, line 34). Given this conclusion, the environmental impacts of extending services in Orange and Louisa Counties should be considered, as well as measures to mitigate those impacts.

Socio-economic Impacts of Construction

Development and population increase (Sec. 4.5.2)

Citing the comprehensive plan developed for Louisa County, the Draft EIS notes that "it is the goal of the Louisa County Board of Supervisors (LCBS) to preserve the rural character of Louisa County" (page 4-17, lines 14-16). But the construction of new reactor units at the North Anna site would require an additional workforce of up to 5,000 individuals (DEIS, Sec. 4.2.2), and the operation of such reactors would require a workforce of an additional 720 persons, which would increase the regional population by an estimated 2,900, assuming each worker represents a family of four (DEIS, Sec. 5.5.2). The Draft EIS states that the influx of construction workers would require the "conversion of some land in surrounding areas to housing developments (e.g., apartment buildings, single family condominiums and homes, manufactured home parks, and recreational vehicle parks) to accommodate construction workers and the addition of new retail developments" (page 4-2, lines 33-36). Even without the construction of the new reactor units, the population of Louisa County is expected to grow by 13 percent in the next five years and another 15 percent between 2010 and 2020 (DEIS, Sec. 4.5.1.3); moreover, the regional population is expected to grow by over 1 million by 2040. Is this degree of development consistent with the wishes and plans described in the LCBS to preserve the "rural character" of the region? Considering the desires of the LCBS, how does the NRC consider these impacts to be "small" (page 4-21, line 4)?

Housing (Section 4.5.3.5)

According to this section of the draft EIS, the construction workforce required to build new reactor units at the NAPS could reach 5,000, and there is a shortage of housing in Louisa and Orange Counties. Yet the building of new rental units to accommodate the influx of workers is not expected (though this seems to be contradicted by assertions to the contrary on page 4-2, lines 32-37), and, as a result, rents may increase and "some low-income populations could be priced out of their rental housing" (DEIS, page 4-30, lines 11-12). Nevertheless, the NRC staff opines that construction of new reactor units at the site will be "economically beneficial" for "disadvantaged population segments,"

concluding that impacts on housing will be “small” and mitigation measures are not warranted. Would it not be prudent to recommend the establishment of additional and/or affordable housing in the region in order to prevent a shortage?

Traffic impacts (Sec. 4.5.3.2)

Construction activities associated with adding additional reactor units to the NAPS site would require an additional workforce of 5,000 (DEIS, § 4.2.2, line 26), bringing the total peak workforce at the site to 7,000 during reactor outages, requiring roughly 3,900 transport vehicles (ER, Part 3, Sec. 4.4.2.2.1(d)) – representing a “major increase in traffic” in certain places (draft EIS, page 4-24, lines 4-5). Despite this dramatic increase in traffic to and from the site, the draft EIS describes the transportation impacts of the proposed action to be “small” and proposes no additional mitigation measures beyond Dominion’s traffic management plan (draft EIS, § 4.2.2, lines 5-8), which may not fully alleviate traffic congestion (page 4-23, line 35). There are no plans to build new roads or alter current roads, despite existing congestion on roads around Lake Anna (draft EIS, page 4-19, line 17). Would not this dramatic increase in traffic alter the “rural character” of Louisa County that the Louisa County Board of Supervisors wants to preserve (draft EIS, page 4-17, lines 14-16)? Furthermore, how can the NRC claim to predict the sufficiency of existing regional roads to support construction activities, considering that the potential for a dramatic increase in population over the next 20 years (*see* draft EIS, Table 2-5), the duration of the ESP?

Furthermore, how can the NRC claim to predict the sufficiency of existing regional roads to support construction activities, considering the potential for a dramatic increase in population over the next 20 years (DEIS, Table 2-5), the duration of the ESP?

A measure propounded in the Draft EIS to mitigate traffic impacts from the construction of new reactors at the North Anna site is the widening of a country road, SR 700 (page 4-24, lines 30-32). For what section and length of roadway would this be required, and what environmental impacts would be expected? What would be the impact on property owners along the route?

What potential effects could the institution of electric utility deregulation in Virginia have on the taxation of Dominion and the NAPS? It is suggested on page 5-42 of the draft EIS that deregulation may affect the amount of property taxes paid by Dominion.

Historic and Cultural Resources

Historic and cultural resources (Sec. 4.6)

Parts of the North Anna site that would be used for new reactors and related facilities have been identified as having a “Moderate-to-High” potential for containing historic or cultural resources (DEIS, page 4-35, lines 33-39). What is the basis for this assessment, and what sort of mitigation measures would be employed should such resources be discovered? Further, what is the nature of the communications with Native American tribes that have concluded the probable absence of any significant traditional properties or cultural resources?

Worker Safety

Radiation exposure (Section 4.9.1)

The DEIS wholly incorporates the calculations and analyses of Dominion regarding the expected routine level of radiation exposure to construction workers building new reactor units and their appurtenant facilities at the NAPS. Has the NRC staff conducted independent reviews to verify the accuracy of Dominion's calculations? Further, has Dominion or the NRC contemplated accident scenarios and their potential affect on a construction workforce that could be as large as 5,000 people?

Air

Air Quality (Sec. 2.3.2)

Please list the non-radiological emissions and amounts that are permitted to be released from the existing plants under the Exclusionary General Permit, as well as the 2000 emission statement. What are the expected emissions with two additional reactors at the site? The DEIS (page 2-17, lines 1-4) states that "additional records to be submitted along with a certification for all emission sources" and that "the additional emissions are expected to be limited to a short test period." Please clarify the phrase "short test period."

Meteorological and Air Quality Impacts (Sec. 5.2)

Please list the "bounding values" of the non-radiological pollutants that would be permitted to be released during auxiliary boilers and generators from the proposed new reactors.

Terrestrial Resources

Transmission Line Rights-of-Way (Secs. 5.1.2 and 5.4.1.4)

The NRC staff is assuming that "the existing transmission lines are adequate and new transmission lines will not be needed" (page 5-2, line 1-11). This is yet another example in the Draft EIS of putting off important analyses, in this case a load flow study, until the COL stage. Determining whether there is sufficient capacity on the existing transmission lines is crucial for analyzing whether the land-use impacts to offsite areas will be significant – obviously an important siting issue. Therefore, this analysis should be done for the Final EIS, and the impacts on terrestrial resources (Sec. 5.4.1.4) and threatened species (Sec. 5.4.3) of building one or more additional transmission lines should be fully considered.

Plant Parameter Envelope

Dominion is not required to choose a specific reactor design in its ESP application, and instead, has selected a range of designs to set a "plant parameter envelope" (DEIS, Sec. 3.2, page 3-3). The fact that none of the reactors that Dominion is using to set its design parameters have ever been built in the U.S. should be explicitly stated in the Final EIS.

Taxes (Sec. 4.5.3.3)

According to the Draft EIS, no quantitative assessment of the impact on regional tax revenue can be provided at this time because Dominion has not yet selected the type of reactor it would build at the North Anna site. This is yet another example of the arbitrariness of the licensing division between ESPs and COLs, a separation that precludes a complete analysis of the environmental impacts that would be produced from the construction and operation of new reactors at the North Anna site (or any reactor site, for that matter).

Issues Missing from the Draft EIS

Vulnerability to terrorism

Nuclear power plants have known vulnerabilities to terrorist attack and sabotage. According to the 9/11 Commission Report, al Qaeda specifically discussed targeting U.S. nuclear plants. Fuel storage pools, dry storage facilities, and reactor control rooms are not designed to withstand the type attack that occurred on September 11, 2001. The Government Accountability Office (GAO) concluded in recent testimony before the U.S. Senate that cargo and general aviation airfields, three of which are located very close to the North Anna Site (DEIS, page 2-10), are more vulnerable to security breaches than commercial airports.⁷ Ignoring the threat because it is "highly speculative"⁸ does not make the threat go away, and indicates one shortfall of using an exclusively risk-based approach.

One possible security measure to protect the reactor from assault by aircraft is to place a reactor below ground level. Therefore, an analysis in the Draft EIS of the suitability of the site to place the reactor containment below-grade level should be done, which would require an in-depth analysis of geological and hydrological conditions at the site.

Does the range of severe accidents that could occur at the North Anna site with the addition of reactor Units 3 and 4 (DEIS, Section 5.10.2) include an external attack on the scale of the one that occurred on September 11, 2001 at the World Trade Center in New York City, where hijacked aircraft were employed to destroy two very large office towers? If not, would such an attack be bound by the accidents considered in the Draft EIS, or would such an event require a unique analysis?

Need for Power and Who Benefits

According to NRC regulations [10 CFR 52.17(a)(2)], the need for power does not have to be addressed in the ESP process. But an evaluation of the need for power and who benefits is crucial to determining whether the ESP application should be considered at all. In fact, the first question that should be asked is whether residents of Virginia will receive

⁷ *Aviation Security: Improvement Still Needed in Federal Aviation Security Efforts*, Testimony of Norman J. Rabkin Before the Subcommittee on Aviation, Committee on Commerce, Science and Transportation, U.S. Senate, Government Accountability Office, GAO-04-592T, March 30, 2004.

⁸ Nuclear Regulatory Commission, *In the Matter of Private Fuel Storage L.L.C.*, Docket No. 72-22-ISFSI, (CLI-02-25), page 13, December 18, 2002.

any of the benefit of new reactors. Pending approval of the North Carolina Utilities Commission, Dominion will join the PJM interconnection. PJM is the largest regional transmission organization (RTO) in the U.S., and currently coordinates the movement of electricity in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia. The Final EIS should include an analysis of what the PJM will mean for Virginia ratepayers, including the fact that Dominion is likely to export the electricity generated by the new reactors at North Anna to other states such as New Jersey where electricity prices are twice as high as Virginia and revenues will be greater.

Other Issues

“Best Management Practices”

Please define the term “best management practices,” which occurs throughout the draft EIS.

Electromagnetic fields and electric transmission line capacity

Since it is possible to make a reasonable estimate of the electric generation output from additional reactors at the North Anna site, why is Dominion allowed to wait until the COL licensing stage to determine whether transmission lines from the site meet the requirements of the National Electric Safety Code (NESC) regarding electrostatic effects from operation (DEIS, Sec. 5.8.4)? The maximum steady-state current allowed by the NESC is 5 mA root mean square (rms), and the current from Units 1 and 2 was found to range as high as 4.95 mA (§ 5.8.4, line 26), so is it reasonable to assume that increased capacity from two new units at the site would exceed NESC standards for electrostatic fields? If so, why is this issue not being addressed at this stage in the licensing process?

Further, the National Institute of Environmental Health Sciences (NIEHS) has determined that electromagnetic fields may pose a leukemia hazard in human populations (draft EIS, page 5-55, lines 1-3). Would a stronger electromagnetic field produced by increased voltage capacity on the transmission lines from the NAPS amplify this hazard?

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