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Supplemental Comments to the October 20, 2011 Emergency Enforcement Petition
Per 10 CFR 2.206 regarding the Post-Earthquake Restart of the North Anna Nuclear Power
Station Submitted by Paul Gunter, Beyond Nuclear

Beyond Nuclear submits the following written comments on behalf of joint petitioners in the matter of the post-earthquake restart of the two unit North Anna nuclear power station owned and operated by Virginia Electric Power Company (VEPCO) also known as Dominion Virginia Power (Dominion).

The supplemental information and request for emergency enforcement action provided by Beyond Nuclear comes in large part by documents provided to us by Robert Alvarez of Takoma Park, Maryland. Mr. Alvarez is a Senior Scholar at the Institute for Policy Studies, Washington, DC on energy and environment policies. Mr. Alvarez also served as a Senior Policy Advisor to the Secretary and Deputy Assistant Secretary for National Security and Environment as well as a Senior Investigator for the U. S. Senate Committee on Governmental Affairs then chaired by Senator John Glenn.

The petitioners have asserted that the Nuclear Regulatory Commission's (NRC) approval for the restart and operation of the North Anna nuclear power station was hasty and premature based in large part on financial considerations to the nuclear utility, particularly given many uncertainties arising and persisting from the unprecedented August 23, 2011 earthquake near the reactor site in Mineral, Virginia.

The petitioners supplement their requested enforcement action for VEPCO to provide the NRC with the submission of a license amendment request for plant modifications and licensing changes related to the restart and continued operations of nuclear power plant including the adequacy, accuracy and reliability of the seismic monitoring equipment onsite that provided data and basis in part for the NRC approval of restart.

Beyond Nuclear submits the account of Bloomberg News that documents expert opinion presented to the NRC that the North Anna nuclear power station seismic monitoring equipment upon which NRC based its restart approval as “ ‘an older system from the 1970’s and is probably not accurate within 10 percent’ and possibly as much as 20 percent, William Leth, earthquake hazards program coordinator at the U.S. Geological Survey, said today at a Nuclear Regulatory Commission meeting.”¹ The news account goes on to state, “The lack of modern instrumentation ‘ ‘hinders a quick, well- informed decision-making’ ’ by reactor owners and the NRC, Leith said. It also ‘ ‘severely limits an engineer’s ability to understand’ ’ how plant components react to ground movement, he said, citing Dominion’s assessment of nuclear-waste storage casks at North Anna that moved during the earthquake.”² Dominion disputed this testimony.

There are seven known earthquake fault lines in the North Anna reactor site area.

The Board has accepted for further review the petitioners requested action that VEPCO submit a formal license amendment request for earthquake related modifications and licensing changes rather than how the plant was allowed to restart with only regulatory “commitments” which the petitioners assert have not and do not represent an adequate and enforceable regulatory tool.

The petitioners identify the Wall Street Journal article “New Quake Risks Seen for Nuclear Plants,” dated January 31, 2012 which states that the NRC is acknowledging “Nuclear reactors in

¹ “Old Equipment May Skew Dominion’s Quake Data, Scientist Says,” Bloomberg News, September 19, 2011, <http://www.bloomberg.com/news/2011-09-14/old-equipment-may-skew-dominion-s-seismic-data-scientist-says.html>

² Ibid, Bloomberg

the central and eastern U.S. face previously unrecognized threats from big earthquakes, the Nuclear Regulatory Commission said Tuesday. Experts said upgrading the plants to withstand more substantial earth movements would be costly and could force some to close.”³ The article goes on to identify that it will require nuclear power plant operators to conduct new seismic studies at all 96 reactors in central and eastern United States predicted by the government’s new seismic model. The petitioners submit that the article identifies that nuclear industry lobbyists and the government are preparing to slow-walk seismic upgrades over the next four year period and perhaps even longer. The article provides the regulatory analysis of senior reactor safety director David Lochbaum with the Union of Concerned Scientists citing that “The NRC already has sufficient evidence to require immediate upgrades to dozens of plants, he said, adding that further delay amounts to a ‘bureaucratic stall tactic.’”⁴

The petitioners further request that the Petition Review Board of the United States Nuclear Regulation Commission take enforcement action with regard to requiring VEPCO to provide analysis and monitoring for the potential impacts of the Lake Anna Dam and the impoundment of water in Lake Anna upon seismic activity around the North Anna nuclear power station in Mineral, Virginia.

The petitioners submit that the operators as part of their licensed condition were required to analyze and monitor for the seismic impact of the impoundment of water created by the Lake Anna Dam and its potential impacts on the North Anna nuclear power plant.

Petitioners submit the case of North Anna Environmental Coalition, June Allen, Petitioner, v. United States Nuclear Regulatory Commission and United States of America, Respondents, Commonwealth of Virginia, Virginia Electric and Power Company, Intervenors, United States Court of Appeals, District of Columbia Circuit. - 533 F.2d 655 Argued Nov. 20, 1975. Decided March 3, 1976. Rehearing Denied May 7, 1976

³ “New Quake Risks Seen for Nuclear Plants,” Wall Street Journal, January 31, 2012, <http://online.wsj.com/article/SB10001424052970203920204577195121591806242.html>

⁴ Ibid, WSJ

“65: The Coalition contends the creation and presence of Lake Anna creates an extra risk at the North Anna site. It is contended that it might induce reaction of the non-capable fault. The Licensing Board and the Appeal Board concluded there was reasonable assurance that the lake will not reactivate the fault. This finding is based on substantial evidence in the record.

64: Two lines of investigation were followed in evaluating the effect of Lake Anna. First, an empirical investigation was undertaken wherein the investigators studied every one of the twelve documented instances (worldwide) in which reservoirs induced earthquakes, and related those empirical findings to the conditions at North Anna. Secondly, a more theoretical investigation was conducted which analyzed the conditions under which lake-induced seismic activity might be anticipated.

65: The empirical study established that thousands of reservoirs have been impounded without event, including 28,000 in the United States alone. When a reservoir has been found to trigger an earthquake, it has done so shortly after filling. In twelve such instances, mentioned earlier, seismic activity began within one year after filling the reservoir. At North Anna three years have already passed without incident.

66: The theoretical study produced the same result. According to the conditions at the site, the risk of Lake Anna reactivating the fault is "vanishingly small." **However, even though the Commission agreed with the results of the investigations, VEPCO has been required to install a microseismic monitoring network which is expected to provide confirmatory evidence or alert VEPCO to any possible change of conditions.”**⁵

⁵ North Anna Environmental Coalition, June Allen, Petitioner, v. United States Nuclear Regulatory Commission and United States of America, Respondents, Commonwealth of Virginia, Virginia Electric and Power Company, Intervenor, United States Court of Appeals, District of Columbia Circuit. - 533 F.2d 655 Argued Nov. 20, 1975. Decided March 3, 1976. Rehearing Denied May 7, 1976 , Justia US Law, <http://law.justia.com/cases/federal/appellate-courts/F2/533/655/238819/>

VEPCO through its Early Site Permit application for North Anna Unit 3 Dominion Power (July 2005) provides statements to the US NRC which discusses the required microseismic monitoring for the North Anna reactor site and the impact of the impoundment of Lake Anna water's influence on seismic activity in the region. VEPCO identifies that it has suspended the required seismic monitoring for the impact of impoundment of Lake Anna water.

They state:

“2.5.3.3 Correlation of Earthquakes with Capable Tectonic Sources

No reported historical earthquake epicenters have been associated with bedrock faults within the 25-mile radius of the ESP site vicinity (Figure 2.5-56). Micro-earthquake monitoring for NAPS was initially conducted over a 2.5-year period from January 21, 1974, to August 1, 1976, and was subsequently extended an additional year to August 1, 1977 (Reference 142). The purpose of the monitoring program was to determine if seismic activity could be associated with faults in the site area or if Lake Anna was producing reservoir-induced seismicity. Micro-earthquakes detected in the 3.5 years of monitoring could not be associated either with faults in the site area or with the impoundment of Lake Anna (Reference 5) (Reference 143) (Reference 144).

“Four stations of the original 17-station network were incorporated into Virginia Polytechnic Institute and State University’s Central Virginia Monitoring Network for the specific purpose of monitoring any changes in seismicity in the region of NAPS. To date, no changes in local earthquake occurrence have been observed that would alter the conclusions reached in 1977 regarding the lack of association of micro-earthquakes with the presence of Lake Anna or with faults in the site area. Micro-earthquakes observed in the site area appear to be part of, or are occurring at, a level no greater than the spatially varying background activity found in the CVSZ.”⁶

⁶ North Anna Early Site Permit , Dominion, Part 2, Site Safety Analysis, July 2005
<http://www.nrc.gov/reactors/new-reactors/new-licensing-files/naesp-14.pdf>

A web page from the Virginia Division of Geology and Mineral Resources states; "The [Virginia Tech Seismological Observatory](#) (VTSO) is one of the primary sources for data on seismic activity in the central East Coast. In 1963, as part of the worldwide program, seismographs were installed at Blacksburg, and in 1977 several more seismographs were stationed in the Commonwealth and operated by the Virginia Division of Geology and Mineral Resources. Some of these instruments were stationed around the North Anna Nuclear Power plant, but in the 1990's, due to budget cuts, most of the North Anna sensors were taken off line."⁷ The petitioners submit that seismic monitoring at and around the North Anna nuclear power station is therefore unreasonably degraded and unduly inadequate.

The petitioners submit that according to various news accounts following the January 30, 2012, 3.1 magnitude earthquake with an epicenter 6 miles SE of Mineral, Virginia (USGS⁸) there have been as many as 100 earthquake aftershocks recorded by the US Geological Survey following the 5.8 magnitude earthquake on August 23, 2011.⁹

Given the significant increase in seismic activity in the area of the North Anna nuclear power plant and the recognition of potential seismic impact from the Lake Anna impoundment and given the NRC is calling for upgrades in seismic evaluations at nuclear power stations, the petitioners therefore supplement their emergency enforcement petition to request that as part of upgraded seismic re-evaluation, modifications and monitoring for the North Anna nuclear power station that the operators be required to reinstall and resume the "microseismic monitoring network" as originally in the licensing agreement to provide confirmatory evidence and/or alert VEPCO to changes in seismic activity induced by the impound of water behind the Lake Anna Dam.

⁷ <http://www.dmme.virginia.gov/DMR3/earthquakes.shtml>

⁸ US Geological Survey, January 30, 2012
<http://earthquake.usgs.gov/earthquakes/recenteqsww/Quakes/se013012b.html>

⁹ http://www.newsplex.com/home/headlines/Aftershock_Recorded_Central_Virginia_138362024.html, and <http://www2.timesdispatch.com/news/2012/jan/30/32-magnitude-aftershock-rattles-central-va-ar-1651220/>

This concludes my remarks.

Paul Gunter, Director

Reactor Oversight Project