

STATE OF VERMONT  
PUBLIC SERVICE BOARD

Petition of Entergy Nuclear Vermont Yankee, )  
LLC, and Entergy Nuclear Operations, Inc., for a )  
certificate of public good, pursuant to 30 V.S.A. )  
§ 248 and 10 V.S.A. § 6522, authorizing the )  
construction of a second independent spent fuel ) Docket No. 8300  
storage installation storage pad and related )  
improvements, including installation of a new )  
diesel generator with an electrical rating of )  
approximately 200 kW, at the Vermont Yankee )  
Nuclear Power Station in the Town of Vernon, )  
Vermont )

SUMMARY OF PREFILED REBUTTAL TESTIMONY OF GEORGE THOMAS

Mr. Thomas's testimony responds to the prefiled testimony of witnesses sponsored by the Vermont Agency of Natural Resources (the "ANR") and the Windham Regional Commission ("WRC").

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PREFILED REBUTTAL TESTIMONY OF GEORGE THOMAS

1    Q1.    State your name.

2    A1.    My name is George Thomas.

3

4    Q2.    Have you previously provided testimony in this docket?

5    A2.    Yes. Terms defined in my prior testimony have the same meaning in my rebuttal  
6           testimony.

7

8    Q3.    What is the purpose of your testimony?

9    A3.    My testimony explains some refinements to Project plans that are under consideration  
10           and responds to the prefiled testimony of witnesses sponsored by the Vermont Agency of  
11           Natural Resources (the “ANR”), and the Windham Regional Commission (“WRC”).

12

13   Q4.    Please explain the refinements to Project plans that are under consideration.

1 A4. Entergy VY is considering modifying the schedule for loading spent fuel casks. Rather  
2 than starting loading in 2019 as stated in my previous testimony, the initial loading may  
3 commence as early as 2017. Entergy VY still plans to complete the transfer of all spent  
4 fuel to the ISFSI storage pads during 2020.

5

6 Q5. Please explain why this schedule modification is under consideration.

7 A5. The reason for considering the change is to provide an even higher level of confidence  
8 that the transfer of all of the spent nuclear fuel that is in the spent fuel pool to dry cask  
9 storage on the two ISFSI storage pads will be complete during 2020. The present  
10 schedule assumes the loading and transfer of 32 casks during 2019. Our dry storage  
11 system vendor (Holtec) has indicated that it will be able to accelerate the delivery  
12 schedule of dry fuel storage equipment, and we are working with Holtec to ensure  
13 availability of qualified personnel to load and transport the casks. In addition, we are  
14 evaluating the feasibility of loading and moving spent nuclear fuel casks to the existing  
15 ISFSI storage pad during construction of the Project and believe that it can be  
16 accomplished safely and efficiently.

17

18 Q6. When does Entergy VY expect to make a final decision on whether it will modify the  
19 loading campaign schedule?

20 A6. We expect to make a final decision by December 2015.

21

1 Q7. Would beginning the loading campaign as early as 2017 result in an increase in the  
2 overall cost of the Project?

3 A7. No. Certain costs would be incurred earlier than originally planned, but the overall cost  
4 of the Project would remain the same.

5

6 Q8. Are there other recent developments relating to the Project that are notable?

7 A8. Yes. Entergy VY has decided to leave the lower half of the 3 foot high North Warehouse  
8 east frost wall and its associated footing in place following the removal of the North  
9 Warehouse and its foundation slab. The east frost wall is the closest wall to the existing  
10 ISFSI storage pad, and leaving the lower half of the wall and its associated footing in  
11 place will provide additional assurance that the existing ISFSI pad has adequate lateral  
12 support during excavation for the second ISFSI storage pad. The other three frost walls  
13 and their associated footings will be removed in their entirety.

14 On a separate matter, Entergy VY was recently informed by the Nuclear  
15 Regulatory Commission (NRC) that the NRC staff had completed its review of the  
16 engineering design calculations for the Second ISFSI storage pad and had identified no  
17 issues with the calculations. Entergy VY expects that the review will be documented in  
18 the NRC inspection report for the third quarter of this year.

19

20 Q9. Please turn to the prefiled testimony submitted by ANR. Do you have any general  
21 observations concerning the prefiled testimony of Mr. Spiese and Mr. Simoes of ANR?

1 A9. The testimony of Mr. Spiese and Mr. Simoes appears predicated on the assumption that  
2 the North Warehouse building was the site's primary storage area for non-radioactive  
3 hazardous waste and does not appear to acknowledge the presence of radioactive  
4 contamination in that structure.

5 The North Warehouse is a radiologically controlled area regulated by the NRC  
6 under VY's 10 C.F.R. Part 50 license and is currently used to store low level radioactive  
7 materials. In addition, the waste-oil burner located in the North Warehouse was used in  
8 the past to burn both radiologically-contaminated and non-contaminated used oil. Given  
9 these facts, Entergy VY radiation surveys of the North Warehouse not surprisingly have  
10 detected radioactive contamination on the building structures. Therefore, the North  
11 Warehouse (including its structural components) and the waste-oil burner will be treated  
12 as radioactively contaminated.

13

14 Q10. How do the circumstances discussed in your immediately prior response affect the  
15 disassembly, transportation and disposal of the North Warehouse building materials and  
16 the waste-oil burner?

17 A10. Because portions of both the North Warehouse and the waste-oil burner are radioactively  
18 contaminated at low levels and because of the presence of lead paint on portions of the  
19 building structure, the entire structure will be considered low-level mixed waste  
20 ("LLMW") at the time of its disassembly. LLMW, as I understand that term, is defined  
21 under Vermont law (in Vermont's Hazardous Waste Management Regulations  
22 ("VHWMR") at Section 7-103) and federal law as including both low level radioactive

1 waste and RCRA<sup>1</sup> hazardous waste. As I understand it, Entergy VY is allowed to  
2 transport and dispose of LLMW pursuant to NRC regulations and the United States  
3 Environmental Protection Agency's "Mixed Waste Rule," which I understand is set forth  
4 at 40 C.F.R. Part 266, Subpart N and has been incorporated into Vermont law (in Section  
5 7-109(b)(2) of the VHWMR). While I am not a lawyer and therefore I cannot explain the  
6 legal aspects of the Mixed Waste Rule, I understand that the Mixed Waste Rule  
7 conditionally exempts LLMW generated at NRC-licensed facilities, such as the VY  
8 Station, from being regulated as "hazardous waste," if Entergy VY complies with the  
9 notification, storage, transportation and disposal and other requirements set forth in the  
10 Mixed Waste Rule. Entergy VY intends to comply with NRC regulations and the Mixed  
11 Waste Rule with respect to the North Warehouse building materials and the waste-oil  
12 burner, which it plans to manage, transport, and dispose of out of state as LLMW.  
13 Entergy VY's actions to comply with the Mixed Waste Rule will include submitting the  
14 requisite notifications, and identifying a low level radioactive waste disposal or other  
15 appropriate management facility that will accept the LLMW in question, among other  
16 requirements.

17  
18 Q11. In connection with removal of the North Warehouse and soils at that site, on pages 4-5 of  
19 his testimony, Mr. Spiese suggests that Entergy VY must prepare a plan for investigating  
20 whether non-radiological hazardous compounds are present in disturbed soils. How does

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<sup>1</sup> As defined in the VHWMR.

1 Entergy VY plan to monitor and sample the soils excavated at the North Warehouse site  
2 for radiological and non-radiological contaminants?

3 A11. Entergy VY has conducted preliminary sampling and analysis of soil beneath the North  
4 Warehouse to detect the presence of radiological contaminants, and those initial samples  
5 did not identify any radioisotopes. Once the North Warehouse and its foundation have  
6 been removed, as explained in my initial testimony, Entergy VY will conduct additional  
7 soil sampling and analysis for radioactive contamination prior to removing the soil from  
8 the VY Station's Protected Area. If soil is determined to be radioactively contaminated,  
9 it will be stored on-site and disposed of in conformance with the NRC's requirements for  
10 disposal of contaminated soil at the VY Station.

11 If excavation exposes soil that is suspected of containing non-radiological  
12 hazardous waste based on soil staining or odor, the soil will be segregated and stored on  
13 site pending sampling and analysis. In addition, Entergy VY will also analyze samples of  
14 excavated soil to determine the presence of any non-radiological hazardous wastes. Any  
15 soil that is determined to be above limits for non-radiological hazardous wastes will be  
16 segregated and stored on site until a determination is made as whether it will be disposed  
17 of as hazardous waste or LLMW. If the extent of the non-radiological hazardous waste  
18 extends outside the excavation boundary, the area will be identified and documented for  
19 future remediation. If the soil is determined to be free of radiological contamination and  
20 below the applicable limits for non-radiological hazardous waste, Entergy VY's current  
21 intent is to stockpile the excavated soil on-site for potential future reuse.

1 Q12. On p.4, A6 and p. 9, A14 of his testimony, Mr. Spiese asserts that Entergy VY is subject  
2 to certain notification requirements under the VHWMR and procedures, and Entergy  
3 should provide notification of intent to commence non-radiological aspects of closure or  
4 partial closure activities in accordance with these rules and procedures. Please respond.

5 A12. As I stated above, when the North Warehouse and waste-oil burner are disassembled,  
6 Entergy VY plans to treat these materials as LLMW. At that time, Entergy VY will  
7 comply with the requirements of the Mixed Waste Rule. Nevertheless, Entergy VY will  
8 continue to inform ANR of its sampling and waste disposal plans associated with  
9 removal of the North Warehouse, through discussions with ANR staff. To the extent  
10 ANR has concerns or questions regarding applicable requirements under federal and state  
11 environmental laws, ANR will be able to address them with Entergy VY or exercise any  
12 applicable authority if differences cannot be resolved through discussions.

13

14 Q13. Both Mr. Spiese and Mr. Simoes recommend that the Board impose a number of  
15 conditions on the CPG to be issued in this docket for construction of the Project. These  
16 conditions, included on page 9 of Mr. Spiese testimony and page 11 of Mr. Simoes  
17 testimony, request the Board to order investigations, determinations and activities  
18 associated with non-radiological hazardous waste. Do you agree with the conditions  
19 proposed?

20 A13. No. As I have explained, the testimony and recommendations of Mr. Spiese and  
21 Mr. Simoes on behalf of ANR are premised on the waste generated by the disassembly of  
22 the North Warehouse being non-radioactive hazardous waste, rather than LLMW. Their



1 testimony and proposed conditions do not reflect the facts that the North Warehouse is  
2 and has been posted and controlled as a radiologically controlled area, that portions of the  
3 building structures are radioactively contaminated, and that the North Warehouse  
4 building materials will be disassembled, transported and disposed of out of state pursuant  
5 to NRC regulations and the Mixed Waste Rule. ANR has acknowledged that the  
6 “Procedure for Conducting Hazardous Material Investigation and Remediation Activities  
7 under 30 V.S.A. § 248,” which requires site investigation work plans when applicable  
8 pursuant to ANR’s Investigation and Remediation of Contaminated Properties Procedure  
9 (“IROC”), does not expressly address LLMW. [A.EN.ANR.1-2]. Therefore, the Board  
10 should not add conditions to the CPG requested by ANR that would be applicable to non-  
11 radiological hazardous waste, because the North Warehouse will be handled as LLMW  
12 when it is disassembled.

13  
14 Q14. Do you have a similar objection to Mr. Simoes’ proposed requirement (p.8) for a  
15 determination regarding whether North Warehouse building materials are considered  
16 non-radiological hazardous waste due to lead paint?

17 A14. Entergy VY’s objection to the requirement proposed by Mr. Simoes is the same as noted  
18 in my previous response because the North Warehouse building materials will be  
19 disposed of as LLMW at the time the building is disassembled in accordance with NRC  
20 requirements and the Mixed Waste Rule.

21

1 Q15. Please respond to Mr. Simoes' recommendation on page 10 of his prefiled testimony that  
2 the Petitioner be required to conduct a non-radiological waste determination of sheathed  
3 cable excavated as part of the Project for PCBs.

4 A15. During the period of construction of the Vermont Yankee Station, PCBs were used in the  
5 sheathing of certain types of electrical cable. The cables used at Vermont Yankee have  
6 not been tested for PCB levels in their sheathing. As a result, the cables that will be  
7 removed from the North Warehouse and the 175 KW diesel generator areas during the  
8 Project will be stored at the VY site in a designated container until a determination has  
9 been made as to whether the cables will be disposed of as non-radiological hazardous  
10 waste or non-radiological non-hazardous waste.

11  
12 Q16. Please turn now to Mr. Campany's prefiled testimony, on behalf of WRC. Mr. Campany  
13 claims that Entergy VY has not fully considered all alternatives to the proposed ISFSI  
14 location and specifically storing all spent nuclear fuel ("SNF") at a single location  
15 elsewhere on the site. How do you respond to Mr. Campany's testimony and his  
16 recommendation that the Board require Entergy VY to consider consolidated storage far  
17 removed from the reactor complex?

18 A16. Entergy VY has considered locating the second ISFSI elsewhere on the company's VY  
19 Station site, including making that second ISFSI a single consolidated storage site for all  
20 of the SNF, including that now stored on the existing ISFSI storage pad. However,  
21 Entergy VY determined that the Project at the proposed location was superior to an ISFSI  
22 at any other location on the site.

1 Q17. Why?

2 A17. The main reasons for not locating the second ISFSI elsewhere on the VY Station site  
3 were described in my Prefiled Testimony dated June 30, 2014. However, each of the  
4 other potential locations that were evaluated had additional distinct disadvantages.

5 1. On the north side of the VY site, the construction of VELCO's Vernon  
6 Substation significantly limits the land area available to locate an ISFSI.  
7 Available VY Station site land to the north and the east of the Vernon  
8 Substation is subject to transmission right of way agreements. Locating an  
9 ISFSI on the available VY Station site land to the west of the Vernon  
10 Substation would create aesthetic problems due to the ISFSI's security  
11 lighting requirement and its close proximity to the residential property along  
12 Governor Hunt Road. Such proximity would also create problems complying  
13 with the radiation dose limits for members of the public, 10 C.F.R. 72.104,  
14 and (to the extent it is not preempted) the Vermont Department of Health's  
15 more stringent requirement in its Radiological Health Rule, Section 5-  
16 305(D)(1)(e).

17 2. On the south side of the VY Protected Area, the area to the east of the West  
18 Cooling Tower was considered. This area is bounded on the east by the  
19 Connecticut River and the west by the West Cooling Tower Deep Basin,  
20 which is planned to remain in service as a back-up supply of make-up water to  
21 the Spent Fuel Pool until all fuel has been removed from the pool. This area  
22 offered no advantages over the chosen location, and the Vertical Cask

1           Transporter haul path would be very difficult to construct due to the VY site's  
2           physical configuration. In addition, the area south of the cooling towers was  
3           determined to be too close to residential property along Governor Hunt Road,  
4           considering the potential impacts of radiation dose and security lighting on  
5           neighboring properties.

6  
7   Q18.   What effect would changing the location of the second ISFSI have?

8   A18.   Even setting aside issues of additional costs, locating the Second ISFSI pad at another  
9           location would significantly delay the transfer of SNF from the spent fuel pool to dry  
10          cask storage. Completely new geological analyses would have to be performed, and new  
11          engineering designs would have to be developed and analyzed based on those geological  
12          analyses. A new haul path to a more distant location would have to be engineered,  
13          designed and constructed. I estimate that such activities would take several years.

14  
15   Q19.   Could the ISFSI be located outside of the existing Owner Controlled Area (OCA)?

16   A19.   Entergy VY owns land west of the OCA. Available land to the west of the OCA was  
17          determined to be too close to residential property located along Governor Hunt Road,  
18          considering the potential impacts of radiation dose and security lighting on neighboring  
19          properties. Furthermore, because storage of SNF must be within a protected area of the  
20          site, 10 C.F.R. 72.212(b)(9)(ii), locating that ISFSI in such a location outside the existing  
21          site would require approval by the NRC with the potential for long delays if nearby

1 residents or other members of the public were concerned about the proximity of the ISFSI  
2 to their properties.

3  
4 Q20. Was locating an ISFSI on the location proposed for VELCO's Vernon Substation  
5 considered as part of the Board's CPG proceedings on the substation?

6 A20. To my knowledge, no party, including WRC which participated in Docket 7373,  
7 expressed a concern that construction of the new substation would interfere with locating  
8 an ISFSI on land where the substation is located.

9  
10 Q21. Why did earlier versions of the plant's Spent Fuel Management Plan and  
11 decommissioning-cost analyses contemplate the possibility of storing all SNF on a new  
12 ISFSI storage pad located elsewhere on the VY Station site?

13 A21. At the time that the existing ISFSI Pad was built, there were concerns whether designing  
14 and constructing a second pad adjacent to the existing pad would affect the existing pad  
15 under seismic conditions. Therefore, it was contemplated that a decommissioning ISFSI  
16 would be built outside of the existing Protected Area. However, since that time,  
17 improvements in the analytical programs used to design an ISFSI pad have allowed the  
18 design and construction of the second pad in the proposed location without affecting the  
19 existing pad under seismic conditions by maintaining a separation distance of thirty feet  
20 from the existing pad.

21

1 Q22. Does this conclude your testimony?

2 A22. Yes, at this time.

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