

WRC Energy Committee

Meeting notes: December 13, 2007

Convened: 6:30 PM, River Garden, Brattleboro

Committee members present: Tom Buchanan, Mike Mandracchia, Bruce Gardner

Members excused: Paul Peterson, Tim Stevenson, Ahren Ahrenholz, Heath Boyer, John Whitman, Denis Pinkernel, Peter Bradford, Wil Shaffer, Eric Stevens

Other commissioners present: Melinda Bussino, Roger Turner

Others present: Rep. Sara Edwards, four members of the public.

Vermont Yankee representatives present: Dave McElwee, Liaison Engineer, Mike Metell,

License Renewal Project manager, and Peter van Oot, legal counsel

WRC staff present: Jim Matteau

1. A snowstorm made attendance difficult and so the turnout was low. Tom Buchanan opened the meeting at about 6:40, and everyone present introduced themselves. Jim noted that Bruce Gardner was a new committee member, representing BDCC.
2. VY staff presented information using Power Pint slides, copies of which were handed out and a copy of which is appended as part of these meeting notes.
3. Points raised during the slide presentation included:
 - a. Jobs at VY include about 500 full time Entergy employees, plus between 125 and 150 full time contract employees (thus the range of job estimates that we have seen, from 495 to 620)
 - b. Power is sold to VT utilities under the “power purchase agreement” at 4 cents per kilowatt-hour, versus a spot market rate of over 8 cents. That power share was 55% of 520 megawatts before the uprate, the same amount of power represents about 47% of the now total output at full power.
 - c. Committee members asked for a projection of contract pricing, or a sense of how Entergy planned to approach the contract negotiations, or a sense of how prices would change with the 20 year extension. Entergy was unable to provide any projection of financial benefit of the new contracts at the time of the meeting, nor could predict when those numbers might become available, or if they will even be available before the PSB hearings begin.
 - d. One slide referred to the NRC review process for license extension as being “rigorous”. It was noted that a recent NRC Inspector General’s report was highly critical of that process, thus questioning whether it was truly rigorous.
 - e. There was discussion of how many reactors had received license extensions (48) and whether there were any problems due to crystallization / embrittlement after years of operation. The answer was “no” with the note that each reactor contains “coupons”, samples of the vessel material which are periodically removed and tested to answer just those types of questions.
 - f. Questions were asked about how many reactors there are in the U.S, how many are boiling water and how many are pressurized steam reactors, and how many of each type received license extensions, how many closed on the original schedule, and how many were shut down ahead of schedule; information to be provided.
 - g. It was noted in the presentation that unlike most 248 proposals, this one entails continuation and no change or new construction. It was responded that perhaps Entergy should consider that the alternative, not extending the operation, was the potential change and so just as much attention should be given to that.

- h. The presentation stated there were “no current plans for replacement of 620 MW of base load power in Vermont.” It was noted that power comes in from outside Vermont when VY is down, and therefore the statement about alternatives likewise should not be restricted to Vermont.
- i. A number of issues relating to management of spent fuel were discussed:
 - i. The notion of fuel reprocessing was mentioned, noting that residuals from reprocessing were less in volume (about 10% residuals) and far shorter lived radioactively.
 - ii. The initial loading of dry casks will be five canisters early in 2008. This will restore “full core offload” capability, the preservation of which had been a WRC priority in the power uprate proceedings. While maintenance of full core offload capability is stated to be Entergy’s intent, it also was noted that there is no requirement to do so.
 - iii. The dry fuel storage pad as built will hold 36 canisters, each containing 68 fuel assemblies (2,448 assemblies).
 - iv. To shut down and completely empty both the reactor and the fuel storage pool, whether in 2012 or 2032, the existing storage pad would be inadequate.
 - v. In response to a question as to whether additional fuel would be placed in canisters to reduce density on the pool, it was stated that such is not required. The Committee chair quoted from the PSB’s order in the dry fuel storage capacity, indicating that it might be required and in any case appears to be supported. [copy attached]
 - vi. It was asked if the requirements for ultimate storage of all spent fuel to be generated through 2032 should be resolved prior to obtaining a CPG for continued operation. Several reasons for suggesting this were noted:
 - 1. Windham Regional Plan policy stating “Encourage a requirement that permanent spent nuclear fuel (SNF) storage be resolved prior to any consideration of extending or reviewing the operating license of Vermont Yankee.” [WRP 2006 page 81]
 - 2. Ultimate storage or disposal of all spent fuel to be generated is reasonable related to a CPG for extended operation, and therefore should be addressed before obtaining a CPG.
 - 3. Both this proposal and the VELCO “Coolidge Connector” project make reference to use of the “north 40” portion of the VY site, therefore creating additional concern that appropriate storage be assured.
 - 4. An engineering layout that identifies and assures ultimate dry storage capacity is only prudent.
 - vii. Commissioners requested a detailed plan of exactly how many fuel assemblies will be stored in the pool and in casks at each point through the anticipated future of the plant as part of the PSB required Fuel Management Plan. Commissioners also asked for the dimensions and specific location of the final dry cask pad to hold all spent fuel, and number of casks anticipated at the end of the 20 year extension. Entergy agreed to provide this information, but was unsure if it could be developed before the final application.
- j. The VY decommissioning plans and related fund also were discussed at length, including:

- i. Had the spent fuel been taken by the USDOE as initially planned, complete decommissioning would be possible five years after shutdown (allowing 5 years minimum time for wet cooling in the pool).
 - ii. Entergy noted they have sued DOE to recover costs associated with storing SNF that DOE was contracted to remove, noting that the lawsuit is limited to costs before a specific date. It is believed DOE would also be liable for continuing costs beyond that date, and that Entergy could file future litigation to recover those costs. Likewise, Entergy believes DOE will be held liable for storage costs beyond decommissioning, but those costs have not yet been incurred, and thus any action is not yet ripe. We noted the disposition of any funds received from DOE after decommissioning should be applied to the associated costs, and should not be held by Entergy. It was noted that funds left in excess of the actual decommissioning cost would be shared, with 55% of the balance returning to Vermont ratepayers.
 - iii. Entergy is required to report the fund's status to the NRC every two years.
 - iv. When Entergy purchased the facility, the sellers "topped off" the fund and Entergy has not made further contributions.
 - v. It was noted that the NRC does not require "greenfielding" after shutdown, but Vermont & Entergy agreements do.
 - vi. The three available options were explained and discussed; DECON (immediate decommissioning); SAFSTOR (shutdown and monitor for a period not to exceed 60 years, allowing radioactivity to decay and the fund to grow; and ENTOMB, which is exactly what the name implies.
 - vii. The Committee chair requested timelines for greenfield scenarios, addressing shutdown in 2012 and 2032, and DECON & SAFSTOR in each case. VY noted that they would provide that as soon as possible, but that there could be apparent inconsistencies with ultimate expert testimony that is not yet prepared; understood.
 - viii. The decommissioning fund balance on 9/30/07 was \$440,003,672.
 - ix. Commissioners expressed concern about potential liability to the tax payers or ratepayers of Vermont if the decommissioning fund is insufficient. Entergy noted that it as owner of the license, if the fund is not sufficient Entergy is directly responsible for the full cost of decommissioning. WRC noted that Entergy plans to spin off five reactors to a new company, and all five have license expirations in the near future. It was asked what would happen if fund requirements have been underestimated, and the owner is not financially capable of covering decommissioning costs. Would there state level or ratepayer exposure. Entergy did not have that information, but promised to research the topic and return an answer to us.
- k. VY representatives referred to a recent ISO-NE study that projects electric demand growth in New England at over 500MW per year, which is roughly equivalent to add a new Vermont Yankee annually. WRC questioned whether such a scenario is sustainable, regardless of the fuel source.
 - l. The Committee requested more detailed information about the number of jobs at VY, the economic impact of finances and of taxes by town, etc. Entergy agreed to try to provide employment by town, and to relate the average Entergy salary to county wide numbers. It was noted that the 495 reported employees is from testimony in the Dry Cask 248 case, and is actually based on employment levels

in 2004. Entergy agreed to try to provide more current employment numbers that are more specific between full time, part time, and contract workers. They also agreed to try and report tax payments by town and at the state level, and to make an effort to report this as an impact on the average tax bill so town, state, and county residents could see the individual direct benefit of the plant. It was acknowledged that persons present were unsure of how to compute those specific numbers, but would see what they could do.

- m. Fuel enrichment was discussed, with the Committee chair asking about the use of CFC114 that us used in Paducah, Kentucky, the only U.S. facility that does this fuel enrichment, and whether a more benign centrifuge system would be employed in the future. [staff note attached] Entergy agreed to research the CFC 114 issue, and provide an overview of how their fuel is produced, and the associated enrichment carbon footprint. It was noted that fuel is purchased from GE. It was also noted by Entergy that some of the fuel is produced from waste products of the old Soviet weapons program, and that should be a considered beneficial reuse of weapons byproducts.
 - n. The anticipated timing was discussed. The letter Entergy submitted to the WRC on December 7 included an anticipated filing date at the PSB on or after January 21, 2008. Based on earlier discussion, the WRC had anticipated a PSB filing file on or after January 28, 2008. After discussion it was agreed to January 28 as the earliest file date, giving WRC until January 21 to submit comments to the PSB.
4. Several committee requests for additional information were made:
- a. More detailed information about employment and taxes, by town;
 - b. More detail on plans for loading and storing dry fuel casks;
 - c. Resolution of the potential conflict regarding proposed uses of the so-called “north 40” area (long term ISFSI and VELCO switchyard);
 - d. List of U.S. plants that were closed early, closed on schedule, and extended; both boiling water and pressurized reactors;
 - e. More information regarding changes that would result from a decision not to extend the operating period beyond March of 2012 (both positive and negative).
- Entergy responded that they would provide as much information as possible by January 7, but some items could take longer.
5. Public comments and questions for consideration:
- a. Noted that long term storage and management of dry fuel casks should be incorporated into a “cradle to grave” accounting of all VY activities;
 - b. Question regarding VY having received a low security rating (responded at the meeting by VY acknowledging that such a test result had occurred and saying that it had been fully corrected);
 - c. Noted that VY should consider all other potential base load sources (Hydro Quebec, e.g.) in its 248 filing;
 - d. Noted that VY plans for long term spent fuel management should include assessing the need to transfer spent fuel to new casks in 100 years; if required, might also require construction of new fuel pool in which to make such transfers.
6. Final Committee discussion and decisions:
- a. The Committee will conduct a public hearing on January 7, 2007, place TBA;
 - b. The Committee may consider repeating this presentation in order to provide an additional opportunity for public involvement, due to today’s snow storm.

7. Adjourned at 9:20 P.M.

The next regular committee meeting will be at 6:30, December 20, 2007 in the WRC office.

CAN also asks that we require Entergy VY to reduce the density of the spent fuel pool by moving more of the fuel rods into dry casks for storage on the ISFSI. WRC voiced a similar concern, asking that we require Entergy VY to optimize the transfer of spent nuclear fuel from the spent fuel pool to dry storage. The evidence here demonstrates that dry cask storage is a better storage option than is storage in the spent fuel pool.¹³³ Similarly, storage in a less-dense spent fuel pool configuration is also preferable.¹³⁴

However, for two reasons, we decline to adopt the condition that CAN requests. First, we understand that the NRC is now evaluating the possibility of reducing the concentration of fuel rods in spent fuel pools at nuclear reactors.¹³⁵ Any action that we take may, as a result, conflict with the results of the NRC's evaluation. Considering the NRC's expertise with these materials, it is more reasonable to wait until its review process is complete.

Second, the evidence shows that the proposed ISFSI may not have sufficient capacity to store both the incremental spent fuel generated through normal operation and the additional dry casks needed to store fuel off-loaded from the spent fuel pool in order to reduce density.¹³⁶

If Entergy VY seeks to extend its operating license, this issue should be revisited. No party contested the fact that a reduction of the number of rods stored in the spent fuel pool was desirable. We would expect that the NRC would have completed additional analyses by that time, as well. Therefore, we will require that, if Entergy VY requests an extension of its CPG beyond March 21, 2012, the amended Spent Fuel Management Plan must address the possibility of reducing the number of fuel rods stored in the spent fuel pool. This analysis should also consider the possibility of constructing an additional ISFSI to accommodate the larger number of dry casks that would result.

We also do not adopt CAN's request that we require Entergy VY to amend the Spent Fuel Management Plan to specify that Entergy VY maintain a canister transporter on-site or WRC's broader request to maintain all equipment related to the dry casks. The evidence shows that Entergy VY will maintain the equipment necessary to move the MPCs on-site.¹³⁷ For example, Entergy VY will purchase a vertical-cask transporter specifically for use with the system deployed at Vermont Yankee.¹³⁸ The VCT will remain on-site and be available exclusively for use at Vermont Yankee.¹³⁹ In addition, Entergy VY has stated that one of the purposes of the second concrete pad is to store the MPC upender — the device used to lift and rotate MPCs.¹⁴⁰

Entergy VY has also committed to maintain on-site all equipment required by the NRC.¹⁴¹ We find Entergy VY's current plans to retain certain equipment at the Vermont Yankee site and the further commitment to comply with federal requirements sufficient.

Finally, we note that Entergy VY's Spent Fuel Management Plan is not fully consistent with its prior commitments. Specifically, the Plan states that decommissioning will occur in compliance with federal requirements. In the Docket 6545 MOU, Entergy VY made additional commitments concerning decommissioning, including returning the site to greenfield conditions. The Plan should reflect these commitments.

Note:

CFC-114 (DICHLOROTETRAFLUOROETHANE) is the primary process stream coolant used in uranium enrichment at the gaseous diffusion plant in Paducah, Kentucky, which produces uranium fuel for commercial reactors and is operated for the United States Department of Energy by Martin Marietta Energy Systems (MMES). Bans on the production of CFC-114 would require change to other technologies, except that existing supplies of CFC-114 may continue to be used.