

RF
From: Frank Arner
To: Amar Patel
Date: Mon, Jan 5, 2004 10:21 AM
Subject: Fwd: FW: Coalition files case against VY uprate

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Subject: Fwd: FW: Coalition files case against VY uprate
Creation Date: Mon, Jan 5, 2004 10:21 AM
From: Frank Arner

Created By: FJA@nrc.gov

Recipients
kp1_po.KP_DO
ACP (Amar Patel)

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From: Rick Ennis
To: Michelle Hart; Richard Lobel
Date: Mon, Jan 5, 2004 9:28 AM
Subject: Fwd: FW: Coalition files case against VY uprate

Released

Attached is an email from Paul Blanch to the NRR allegations coordinator, Greg Cwalina related to the Vermont Yankee (VY) extended power uprate (EPU) amendment request. Greg's forwarding email indicates that Blanch's email is not an allegation since the amendment request is still under review. Blanch's email contains the following:

1) Article dated 1/3/04 in the Brattleboro Reformer that discusses the filing of testimony by the New England Coalition (NEC) to the Vermont Public Service Board (PSB) opposing the VY EPU.

2) Testimony by Paul Blanch for NEC which claims that proposed VY's EPU amendment would not be in conformance with NRC regulations and guidance related to emergency core cooling system (ECCS) net positive suction head (NPSH) and use of check valves for containment isolation (see testimony response to questions Q13 through Q17). Blanch references GL 97-04, RG 1.1, RG 1.82, and GDC 56 to support his claims. The issues related to NPSH are similar to the issues raised in a 12/8/03 letter to the NRC from the PSB (Yellow Ticket 020030194, TAC MB1505, ML033450299). His response to question Q18 also states concerns regarding the offsite dose. His response to question Q19 states that there should be a complete review of VY by the NRC on the order of an Independent Safety Assessment (ISA) similar to that performed at Maine Yankee in 1996. He states that the State of Vermont should insist on the right to participate in the ISA with an independent professional team that is capable of peer review.

Staff from Region I were recently scheduled to participate in a public meeting, coordinated by the PSB, to discuss why the NRC staff believes that an ISA is not necessary. However, that meeting was canceled due to poor weather conditions. It is expected that the meeting will be rescheduled in the near future. At that meeting, I believe we should be able to state that the issues raised in Paul Blanch's testimony are covered as part of our normal EPU amendment review. **Therefore, I request that the following VY EPU reviewers confirm that their review will cover the areas discussed in Blanch's testimony as follows:**

Rich Lobel, SPSB-C (Containment) - Questions Q13 through Q17
Michelle Hart SPSC-C (Dose) - Question 18

Please let me know if you have any questions.

Thanks,

Rick Ennis
415-1420

CC: Anthony McMurtray; Beth Siemel; Cliff Anderson; Cornelius Holden; Darrell Roberts; David Pelton; Diane Screnci; Elizabeth Hayden; Eric Leeds; Frank Arner; Gregory Cwalina; Mohammed Shuaibi; Robert Dennig; Tad Marsh

NAC

From: Robert Pulsifer
To: Rick Ennis
Date: Mon, Jan 5, 2004 6:35 AM
Subject: Fwd: FW: Coalition files case against VY uprate

Rel

NR

From: Gregory Cwalina
To: Pulsifer, Robert
Date: Mon, Jan 5, 2004 6:34 AM
Subject: Fwd: FW: Coalition files case against VY uprate

Bel

Bob, I received the attached from Paul Blanch. It is not an allegation since the issue is still under review. However, I think it is something you might want to have considered during the Vermont Yankee Power Uprate review.

From: "Paul Blanch" <pdblanch@comcast.net>
To: "Gregory Cwalina" <GCC@nrc.gov>
Date: Sat, Jan 3, 2004 10:13 AM
Subject: FW: Coalition files case against VY uprate

Paul
We

Greg:

This may eventually result in an allegation so you will have something to do this year.

-----Original Message-----

From: Paul Blanch [mailto:pdblanch@comcast.net]
Sent: Saturday, January 03, 2004 8:59 AM
To: 'Mario Bonaca'
Subject: Coalition files case against VY uprate

Mario:

We will be bringing this issue to the NRC and possibly the ACRS. Entergy is proposing this upgrade and the NRC is looking the other way with respect to NPSH and in clear violation of Generic Letter 97-01, Regulatory Guides 1.1 and 1.82 Revision 3 dated November 2003. See enclosed testimony submitted yesterday.

Have a great new year.

Brattleboro Reformer

Coalition files case against VY uprate
By TOBY HENRY
Reformer Staff

Saturday, January 03, 2004 - BRATTLEBORO -- Members of the New England Coalition, an intervenor in the Vermont Yankee nuclear power plant's "uprate" bid, reported a flurry of activity on Friday in order to meet the deadline for filing Public Service Board testimony.

Peter Alexander, the coalition's executive director, summarized the final filing as a statement that Vermont Yankee's "uprate" -- a proposal first put forward last year to boost the plant's output by some 20 percent -- will be a serious financial and safety risk for the Green Mountain State and its residents.

Increased radiation and nuclear waste, warmer water discharged to the Connecticut River and the lack of a proven benefit to ratepayers weighed heavily in the coalition's statements on Friday, Alexander said.

"We have testimony from a number of expert witnesses that we believe will prove there is more than ample evidence that the uprate would be a huge mistake for the state of Vermont and that it should not take place," he said.

But Vermont Yankee officials stuck by their guns on Friday, insisting that a \$20 million memorandum of understanding reached in late 2003 with the Department of Public Service proves that the power boost will bring about a significant benefit for the state. In the agreement, plant owner Entergy promises to distribute the \$20 million to a variety of sources, including ratepayer subsidies and a Lake Champlain cleanup program.

The department indicated its approved of the uprate after the offer was made, and final word on a certificate of public good for the uprate from the Public Service Board is expected in mid-March. The federal Nuclear Regulatory Commission, which has received a copy of the plant's request, is expected to rule on the power boost next fall.

Vermont Yankee spokesman Rob Williams said that Entergy did not file any testimony on Friday and does not plan to file rebuttal on the coalition's final statements, but added that Entergy will address the matter in a week of board hearings slated to begin on Jan. 12.

Williams defended the plant's position, stressing that the increased river water temperatures have been approved by a Vermont Agency of Natural Resources discharge permit and will not have a negative effect on the river. If the uprate is approved, he said, the added benefit would be worth the additional nuclear waste.

Expert witnesses whose testimony was included in the coalition's Friday filing include David Lochbaum, a nuclear safety engineer with the Cambridge, Mass.-based Union of Concerned Scientists; John Halstead, a professor of economics at the University of New Hampshire; and former nuclear executive Arnie Gunderson. Describing his own testimony, Gunderson attacked the \$20 million agreement between Entergy and the department as one that does not truly provide a benefit to state ratepayers.

Part of the agreement, he said, calls for the plant owner to pay \$1 million per year for three years to help keep costs down if ratepayers are forced to import more expensive electricity in the event of an uprate-related outage. This portion of the agreement becomes effective this year, he added.

"That's not really a lot of money," he said. "Entergy isn't really sticking their neck out. Plus, the plant is more likely to fail around 2008 or 2009, when it becomes older, but (the agreement) doesn't indemnify anyone after 2007."

Gundersen said the uprate will also boost off-site radiation doses which, at 18.7 millirem at the Vernon Elementary School, are already close to the state limit of 20 millirem.

"Entergy's number doesn't even take into account on-site fuel storage which (with the uprate) would push the dosage to over 25 millirem, which exceeds the federal limit," he said. "(The plant) does not have (on-site fuel storage) now, but documentation shows that the plant will eventually have to consider this prospect."

Gundersen said that the uprate would also cause a \$15 million increase in the plant's decommissioning costs because of on-site radiation, meaning that state ratepayers could possibly lose out on most or all of the excess decommissioning funds that would otherwise be returned. According to existing guidelines, once the plant is closed, Entergy and state ratepayers will evenly split any leftover decommissioning money.

Paul Blanch, a 35-year veteran nuclear engineer and a longtime consultant to various nuclear power companies, including Entergy, also provided testimony on Friday. Blanch said that filed documents he reviewed indicate that Entergy is seeking a variance to avoid having an NRC-mandated pressure level present in its emergency core cooling system in the event of an accident.

Instead, he added, the plant proposes to keep its radiation containment at an elevated level during an accident, a situation which could result in increased radiation released to the environment.

"There are specific regulations requiring that a certain pressure be available so that the reactor can be cooled in the event of an accident," he said. "(Entergy is) looking for an amendment, but what they've proposed to do is against NRC regulations. Violation of these regulations is what resulted in the shutdown of the Connecticut Yankee and Maine Yankee (nuclear plants)."

Ray Shadis, who submitted the last piece of coalition testimony late Friday afternoon, described the evidence-gathering process over the past year as a burdensome one made more difficult by the board's inability to understand the true risks of the proposal.

"The board, I think, from day one, approached (the uprate) as if it were inconsequential, a small matter," said Shadis, a coalition staff advisor. "I really fault the board for not bringing in experts to tell

them what the full impacts would be. It's not until the end of a case when it is realized how complicated a proposal will be and what the ramifications are."

STATE OF VERMONT
PUBLIC SERVICE BOARD

Petition of Entergy Nuclear Vermont Yankee, LLC) December 29,
2003
and Entergy Nuclear Operations, Inc., pursuant to) Docket No. 6812
30 V.S.A. §248, for a Certificate of Public Good)
to modify certain generation facilities)

**PREFILED SURREBUTTAL TESTIMONY OF
PAUL M. BLANCH
ON BEHALF OF NEW ENGLAND COALITION**

Summary: Paul Blanch’s testimony addresses the need for more intensive inspection of Vermont Yankee Nuclear Power Station that that which is presently planned prior to extended power uprate. His testimony responds to and rebuts testimony of Entergy and Department of Public Service witnesses regarding the advisability of a prerequisite U.S. Nuclear Regulatory Commission Independent Safety Assessment [or its equivalent] as it pertains to issues of safety and reliability.

**PREFILED SURREBUTTAL TESTIMONY OF
Paul M. Blanch
ON BEHALF OF NEW ENGLAND COALITION**

Q1. Please state your name and business address and a brief summary of your related nuclear experience.

Response: My name is Paul Blanch and I reside and conduct my business at 135 Hyde Road, West Hartford Ct. 06117. I have been employed in the nuclear industry for more than 35 years. For more than 25 years, I was employed by Northeast Utilities as Engineering Supervisor and from 1997 to 2001 I was a consultant reporting to the Chief Nuclear Officer (CNO) at the Millstone Nuclear Plant in Waterford Ct. I was also a consultant reporting directly to the CNO at Indian Point Nuclear owned and operated by Entergy.

Q2. Have you previously testified in this proceeding?

Response: No.

Q3. What is your understanding of this proceeding?

Response: It is my understanding that Entergy Nuclear Vermont Yankee (Entergy), LLC, seeks permission to modify Vermont Yankee Nuclear Power Station and to increase the licensed thermal output of the Vermont Yankee reactor core by approximately twenty (20) percent so as to be able to generate more electricity.

Q4. What is the purpose of your testimony?

Response: My testimony addresses the need for more intensive inspection of Vermont Yankee Nuclear Power Station that that which is presently planned prior to extended power uprate. My testimony responds to and rebuts testimony of Entergy and

Department of Public Service witnesses regarding the advisability of a prerequisite U.S. Nuclear Regulatory Commission Independent Safety Assessment [or its equivalent] as it pertains to issues of safety and reliability.

My testimony is based, in part, on a cursory review of the documents that form the basis for Vermont Yankee's application for the Extended Power Upgrade (EPU), as well as a review of applicable Nuclear Regulatory Commission documents.

Q5. Are you aware of any previous safety and/or reliability issues addressed at Vermont Yankee? How significant were these problems?

Response: In 1992, while employed at Millstone I discovered a significant problem with the reactor water level monitors. This problem impacted all boiling water reactors, including Vermont Yankee, in that in the event of an accident, the operators would have been led to believe that the reactor core was properly covered and being cooled, when in fact, the actual water level in the reactor may have been 37 feet less than the indicated level. Eventually, in May 1993, the NRC issued a Bulletin¹ requiring all BWR's to fix this major safety problem.

Q6. Did you report these problems to the NRC, the State of Vermont and/or other potentially impacted entities?

Response: I immediately reported this problem to my management, the NRC, General Electric and to Mr. William Sherman.

Q7. Why did you contact Mr. Sherman and what was his response?

Response: From my previous working relationship with Mr. Sherman while he was employed by Stone and Webster, I considered Mr. Sherman a person of integrity and

the State Advisor to Vermont should be concerned with a safety problem at the Vermont Yankee. I contacted Mr. Sherman by phone and he assured me he would look into the problem. This was the last contact I have had with Mr. Sherman. I have been unable to find through a search of NRC archives, any indication of written communication from Mr. Sherman to NRC concerning this subject.

Q8. Why are you identifying this issue at this time?

Response: I am bringing this issue to provide an example in support of my conclusion, otherwise based on a reading of the Technical Hearing Transcripts and discovery in this Docket, that the oversight provided in the past by the State of Vermont appears to have little concern for the safe operation of Vermont Yankee and relies solely on the licensee or NRC for safety assessments. In this particular case both the licensee and the State of Vermont were aware of an immediate safety concern yet took no action to correct the problem.

Q9. Did VY ever address this problem?

Response: I believe VY eventually addressed this problem at a cost in excess of \$1 million, however elected to operate for an extended period of time with inoperable water level instruments.

Q10. What documents do you have in your possession and how did you obtain these documents?

Response: Most of the documents I possess were transmitted to me from Mr. Raymond Shadis and Mr. Arnold Gundersen. Additionally I have received documents from the law firm representing Entergy including a series of propriety documents related

to the EPU. I estimate that these documents are in excess of 200,000 pages.

Q11. Did you review all the documentation supplied to you for this EPU?

Response: Due to time constraints, I was only able to selectively review some of the documents. The form in which I received most of these documents was electronic, that is, the documents were recorded on recordable compact disks. The data, in the form in which it was presented, was not searchable save by document title. Contents search required the time-consuming process of opening each document, many of which were inscrutably titled with simple alphabetic and numeric designations so as to defy prediction of their contents. Many documents contained attachments and sub-files. Thus I found that ascertaining what was contained in each of the several thousand documents provided could take, on average, 20 minutes; in total more than an average man/work year. Further, there were numerous references and discussions about a calculations, for example (VYC-0808), used to justify credit for containment overpressure for long term post accident cooling. This particular calculation could not be located within the documents supplied by Entergy.

Q12. How did you determine which documents you would be reviewing?

Response: Given the fact that VY is proposing to increase its power output by 20% I elected to review those areas that may be impacted by the additional post accident core decay heat and the additional exposure resulting from this proposed power increase.

Q13. During your review did you identify any reliability or safety concerns that have not been properly addressed?

Response: Yes. In Mr. Thayer's letter (BVY-03-80) to the NRC dated September 10, 2003 he states:

“As part of the proposed license amendment, VY is proposing a change to the licensing bases with regard to the crediting of containment overpressure for calculating certain pump net-positive suction head (NPSH) following a loss-of-coolant accident (LOCA), station blackout and Appendix R fire events. VYNPS currently complies with the provisions of Safety Guide 16 (i.e., Regulatory Guide 1.1). As a result of the proposed EPU, VY is revising these design bases, recognizing the contribution to NPSH provided by increased containment pressure following the postulated events. Credit for containment overpressure will be taken to assure that adequate NPSH is available for low pressure emergency core cooling system (ECCS) pumps. This change is consistent with actions taken by other utilities who have sought EPUs. PUSAR Section 4.2.6 provides the justification for the proposed change in licensing bases.”

Technical Evaluation No. 2003-058 of this proposed change states:

“Power uprate results in higher suppression pool temperatures for events that depend on the pool as the primary initial heat sink. Evaluations of Core Spray and RHR pumps show that at the higher pool temperatures associated with power uprate, a credit for containment overpressure (COP) will be required to assure adequate NPSH margin. Appendix R events produce high suppression pool temperatures, and depending on the scenario, require operation of the Core Spray and RHR/LPCI pumps taking suction from the suppression pool. However, an Appendix R event will not produce an automatic Primary Containment Isolation signal. Therefore, operator actions will/may be required to achieve and maintain containment isolation. The purpose of this TE is to determine which valves are required to be closed and maintained closed in order to assure the required COP is available.

The scope of review is limited to containment isolation valves that interface directly with the containment atmosphere. Valves that interface with the RPV or systems that interface with the RPV do not need to be included since Appendix R events do not involve a breach of the primary system, creating an opening to the containment. Furthermore, valves that are in a closed loop, or interfacing with normally pressurized systems, or dead-ended with a locally-operated (i.e. not electrical) manual closed valve do not need to be considered. Credit is also taken for check valves. Thus, only automatic and/or remote-manually operated valves that, if open, could result in depressurizing the containment were considered”.

Q14. To a layperson, what does this mean?

Response: With the additional heat generated as a direct result of the EPU, and in the event of an accident, the water that is intended to provide long term cooling to the

core will be at a higher temperature. In order to prevent fuel melting, it is necessary to pump this water from the torus back into the reactor. With the increase in water temperature from the EPU, the pumps designed to deliver this water will not function due to cavitation induced by the significant increase in temperature. To address this situation, VY is proposing to increase the pressure, and maintain this higher pressure, in the torus in order to assure operation of these pumps. This is similar to a pressure cooker where the pressure is raised in order to prevent boiling at an elevated temperature.

In order to maintain this pressure, VY proposes to manually close two vent valves from the torus and assume that no torus leakage occurs during the 50 hours of pump operation assumed to be needed to keep the core from melting.

Q15. Why is this a problem?

Response: In 1997, the NRC recognized this as a potential problem at numerous nuclear plants such as Maine Yankee, Connecticut Yankee, Pilgrim, Dresden and others. As a result, the NRC issued Generic Letter 97-04 [attached as NEC Exhibit PMB- 1] that clearly states:

"RG 1.1 establishes the regulatory position that emergency core cooling and containment heat removal systems should be designed so that adequate NPSH is provided to system pumps assuming maximum expected temperatures of pumped fluids and no increase in containment pressure from that present before any postulated LOCAs. NRC Standard Review Plan (SRP) 6.2.2, "Containment Heat Removal Systems" (NUREG-0800, Revision 4, dated October 1985) clarifies RG 1.1 by stating that the NPSH analysis should be based on the assumption that the containment pressure equals the vapor pressure of the sump water, in order to ensure that credit is not taken for containment pressurization during the transient.

I would like to point out that this document identifies inadequate NPSH as a defining factor in NRC's 1996 order derating Maine Yankee from its ten percent power uprate and

returning the plant to original licensed power. If approved, Vermont Yankee will be unique in that it is taking credit for a pressurized torus for a period of about 50 hours, resulting in additional radiation leakage to the environment, an issue that appears not to have been addressed at this time. Further, should a breach of the torus occur due to the long-term pressure, not only would there be a complete loss of core cooling there would also be a significant radiation release to the surrounding environment.

Q16. In his letter to the NRC dated September 10, 2003 Mr. Thayer stated:

“This change is consistent with actions taken by other utilities who have sought EPU’s.” Have other plants received approval from the NRC to take credit for this pressure to assure long term cooling of the core?

Response: According to Generic Letter 97-04, the NRC has approved containment overpressure credit for the Dresden plant; however the credit is only for a period of 240 seconds. In contrast, Vermont Yankee is seeking approval for this overpressure for a period exceeding 50 hours. In my professional opinion, I do not consider this to be “consistent with actions taken by other utilities who have sought EPU’s.” I also note that General Electric, Entergy and the NRC have not specifically addressed all of the regulatory requirements of NRC Regulatory Guide 1.1¹ and NRC Generic Letter 97.04². Further, the NRC, Entergy and general Electric have apparently overlooked the most recent clarification to Regulatory guide 1.82 Revision 3 titled “WATER SOURCES FOR LONG-TERM RECIRCULATION COOLING FOLLOWING A LOSS-OF-COOLANT ACCIDENT” dated November 2003

Q17. Technical Evaluation No. 2003-058 of this proposed change states that

“Credit is also taken for check valves”. Is this statement consistent with NRC regulations?

Response: No. 10 CFR 50 Appendix A clearly states:

Criterion 56 -- Primary containment isolation. Each line that connects

¹ Net Positive Suction Head for Emergency Core Cooling and Containment Heat Removal System Pumps (Safety Guide 1)

² NRC GENERIC LETTER 97-04: ASSURANCE OF SUFFICIENT NET POSITIVE SUCTION HEAD FOR EMERGENCY CORE COOLING AND CONTAINMENT HEAT REMOVAL PUMPS

directly to the containment atmosphere and penetrates primary reactor containment shall be provided with containment isolation valves as follows, unless it can be demonstrated that the containment isolation provisions for a specific class of lines, such as instrument lines, are acceptable on some other defined basis:

(1) One locked closed isolation valve inside and one locked closed isolation valve outside containment; or

(2) One automatic isolation valve inside and one locked closed isolation valve outside containment; or

(3) One locked closed isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment; or

(4) One automatic isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment.[Emphasis added]

It appears that Vermont Yankee is proposing a clear violation of this very explicit requirement in that it is taking credit for a simple check valve and is not providing any automatic isolation of the containment valves.

Q18. In response to Q12, you mentioned your concern about additional exposure due to the EPU. What is the basis of your concern?

Response: It is my understanding that the State of Vermont has imposed a dose limit of 20 mrem/yr at the site boundary. My brief review indicates that based upon previous calculations and actual measurements, the site boundary dose is rapidly approaching this limit possibly without consideration of all potential sources of radiation from the plant.

For example VYC-1915 discusses exposure at the boat launch ramp of 0.9 mrem based upon an assumed occupancy of only 67 hours per year. I am not sure if this area is accessible to the general public, but this calculation indicates there are additional

exposure pathways that may not have been considered.

As a direct result of the EPU, it will be necessary for VY to commence the fabrication of dry cask storage at an earlier date than without the EPU. My review of the offsite dose calculations did not find any consideration of the additional doses from the dry casks which typically have a contact dose ranging from 10 to 50 mr/hr.

Vermont Yankee's letter BVY 96-93 dated August 2, 1996 discusses the disposal of radioactive material on site and the resulting site boundary dose of about 1 mr/yr. My review of the offsite dose calculation did not observe this contribution to the site boundary dose.

Q19. In your opinion, what needs to be done to assure that Vermont Yankee will operate reliably, safely and in compliance with all NRC and the State of Vermont regulations?

Response: I have reviewed Mr. Lochbaum's testimony in this docket and I agree that there needs to be a complete review of Vermont Yankee by the NRC on the order of an Independent Safety Assessment similar to that performed at Maine Yankee in 1996. Following on the Maine model, the State of Vermont should insist on the right to participate in the ISA with an independent professional team that is capable of peer review. This should be completed before or conditional to issuance of a Certificate of Public Good in order to assure the public that the plant is and will remain in compliance with all State and Federal Regulations with the EPU. I would, in particular, want assurance that, given the calculated increased torus pressure after an accident and predictable increased leakage as a result, the probability and the consequences of an

accident are not increased because of EPU. Conducting a “vertical slice” review, such as the ISA, is the first step and would provide a basis upon which to build assessment of the reliability and safety impacts of EPU. Should this review indicate no significant reliability or safety problems, I would be comfortable if the NRC would certify that, based upon its review of the plant safety that the plant is in compliance with all federal regulations.

It is my recommendation, based on the foregoing facts and professional observations, that the Vermont Public Service Board precede or condition issuance of a Certificate of Public Good for EPU with:

1. a Board request to NRC for a complete Independent Safety Assessment and/or
2. NRC certification that Vermont Yankee is now in full compliance with all federal regulations.

Q20. Does that conclude your testimony?

Response: Yes.

BL-93-03 Resolution of Issues Related to Reactor Vessel Water Level Instrumentation in BWRs