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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

February 15, 2005 (7:37am)

Before the Atomic Safety and Licensing Board

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

In the Matter of)	
)	
ENTERGY NUCLEAR VERMONT)	Docket No. 50-271
YANKEE, LLC and ENTERGY)	
NUCLEAR OPERATIONS, INC.)	ASLBP No. 04-832-02-OLA
(Vermont Yankee Nuclear Power Station))	(Operating License Amendment)
)	

**ENTERGY'S MOTION TO COMPEL DISCOVERY FROM
THE NEW ENGLAND COALITION**

Applicants Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (collectively, "Entergy") file this motion to compel New England Coalition ("NEC") to disclose documents relevant to its contentions in this proceeding. NEC has failed to disclose an array of relevant communications and documents. Board intervention is necessary because NEC's initial disclosure¹ and subsequent Special Supplemental Disclosure:² (1) failed to comply with applicable Commission rules by not providing documents relevant to NEC's admitted contentions; (2) improperly redacted relevant information from documents that were disclosed; and (3) failed to identify what documents were being withheld on privilege grounds, or to provide the basis for the privilege asserted for each such withheld document. Entergy, therefore, seeks the Board's assistance in directing NEC to provide the documents it continues to improperly withhold.

¹ "New England Coalition's Disclosure of Documents Pursuant to 10 C.F.R. § 2.336" (Jan. 20, 2005) ("NEC's Initial Disclosure").

² "New England Coalition's (Special) First Supplemental Discovery Disclosure to Accommodate Entergy's Request for E-mail Communications Between New England Coalition and Its Representatives and Agents in this Case Prior To New England Coalition Retaining Counsel" (Feb. 4, 2005) ("NEC's Special Supplemental Disclosure").

I. FACTUAL BACKGROUND

On November 22, 2004, the Board admitted two of NEC's proposed contentions in this proceeding. Memorandum and Order (Ruling on Standing, Contentions, and State Reservation of Rights), LBP-04-28, 60 NRC 548 (2004). On December 16, 2004, the Board ordered the parties to make their initial disclosures pursuant to 10 C.F.R. § 2.336(a) within 30 days of the ruling.³ Memorandum and Order (Selection of Hearing Procedures and Ruling on State Statutory Claim), LBP-04-31, slip op. at 28-29 (Dec. 16, 2004). The Vermont Department of Public Service ("DPS") and Entergy produced their mandatory disclosures by January 18, 2005, pursuant to the Board's December 16, 2004, Order. NEC, after receiving an extension, provided what it certified was its disclosure pursuant to 10 C.F.R. § 2.336(a) on January 20, 2005.

In its initial, January 20, 2005 disclosure, NEC identified a total of 252 documents. Of these 252 documents, 170 were listed as "Documents in NEC's possession that are available on the NRC Website," one was listed as "presumptively available to or in the possession of the parties," and one was listed as "in possession of NEC but too voluminous to produce." NEC Initial

³ The Commission's rules require parties such as NEC to disclose documents relevant to their admitted contentions. Such parties

shall, within thirty (30) days of the issuance of the order granting a request for hearing or petition to intervene and without further order or request from any party, disclose and provide:

...

(2)(i) A copy, or a description by category and location, of all documents and data compilations in the possession, custody, or control of the party that are relevant to the contentions . . .

...

(3) A list of documents otherwise required to be disclosed for which a claim of privilege or protected status is being made, together with sufficient information for assessing the claim of privilege or protected status of the documents.

10 C.F.R. § 2.336(a), 69 Fed. Reg. 2,182, 2,247-48 (Jan. 14, 2004).

Disclosure at 8, 23, 24. The remaining 80 documents, which were the only documents actually produced by NEC, represent an incomplete set. The only document among those 80 that was generated by or for NEC is a "VY Cooling Tower Review" noted to have been "prepared specially for NEC." *Id.* at 5 (Index No. 40). The majority of the remaining 79 documents are copies of VY documents provided to NEC by Entergy in the State Extended Power Uprate proceeding (State of Vermont Public Service Board – Docket No. 6812). NEC failed to provide or identify a single piece of correspondence, email, note, draft or final document, or other data of any kind relevant to the admitted contentions that was generated by an NEC member, official, or technical consultant. Thus, on its face, NEC's disclosure did not comply with Commission requirements. No log was provided listing documents withheld on the grounds of privilege or the basis upon which such privilege is being asserted.

On the January 21, 2005, telephonic prehearing conference, one of the issues discussed was Entergy's concerns with NEC's compliance with its obligation to prepare a log of privileged documents. *See* Tr. 623-31. Although agreeing to waive preparation by NEC of a log of "truly attorney/client or attorney work product" materials, counsel for Entergy specifically stated that Entergy had not waived the production of communications between NEC's representative, Mr. Shadis, and NEC technical consultants Mr. Gundersen and Mr. Blanch, because it was not clear that any of the privileges available to protect certain documents applied to those communications. *Id.* at 624. Counsel for NEC stated that "what I am going to have to do now, I guess, is I'm going to have to get in touch with these people and ask them to provide me with whatever it is that they have left from the period of time prior to my becoming counsel with them, and then review all of it" and then "provide it." *Id.* at 629. The Board Chairman responded to NEC counsel's statements by noting that

[Y]our obligation to produce the documents under [10 C.F.R. §] 2.336 doesn't begin with the date you started [representing NEC]. You're supposed to go through whatever you and your client have and produce the relevant documents.

If you fail to produce the relevant documents and if [opposing counsel] sees a gap in there, they can make a motion for production. They can make a motion objecting to the adequacy of what you have disclosed here and say where are all the Ray Shadis documents of such and such a vintage, and we can have a fight about that later. So you know, you have an obligation to produce them.

Id. at 629-30. Thus, NEC was expressly directed to disclose all relevant documents, especially e-mails and other correspondence between and among Messrs. Shadis, Gundersen, Blanch, and perhaps others, and thereby comply with 10 C.F.R. § 2.336.

Despite the clear language of the discovery rule, Entergy's explicit request, and the Board's directive, Energy believes that NEC has again failed to comply with the disclosure requirements of 10 C.F.R. § 2.336. On February 4, 2005, NEC filed its Special Supplemental Disclosure. This "special" disclosure provided a total of 32 emails.⁴ NEC Special Supplemental Disclosure, Att. 3. The earliest email disclosed was dated October 13, 2003, and the latest October 17, 2004. *Id.* at 1-4. All but two of the emails were from "A. Gundersen" (presumably NEC's consultant Arnold Gunderson) with the two exceptions being from "R. Shadis" (presumably NEC's representative Ray Shadis) *Id.* There were no emails provided from the files of Mr. Blanch or Mr. Alexander,⁵ although both were listed as recipients on many of the disclosed emails. In addition, NEC has redacted all or part of 24 of the 32 emails, the majority of the redactions (16) deleting the entire message text. *Id.*, Att. 2; *see* Exhibit 1 hereto (NEC's disclosed emails, including redacted ones). Again, no log is provided listing any other documents withheld on the grounds of privilege or the basis upon which such privilege is being asserted.

⁴ No other documents or information were identified or provided.

⁵ Mr. Alexander is an NEC officer.

II. LEGAL STANDARDS

NRC regulations allow parties to withhold privileged or protected documents from disclosure. In lieu of disclosure of such documents, however, a party must provide a "list of documents otherwise provided to be disclosed for which a claim of privilege or protected status is being made, together with sufficient information for assessing the claim of privilege or protected status of the documents." 10 C.F.R. § 2.336(a)(3). Although Subpart C (where 10 C.F.R. § 2.336 is located) does not further discuss "privilege" or "protected status," these concepts have long been a part of NRC rules.

A party may obtain discovery of documents and tangible things otherwise discoverable under [10 C.F.R. § 2.705(b)(1)] and prepared in anticipation of or for the hearing by or for another party's representative (including his attorney, consultant, surety, indemnitor, insurer, or agent) only upon a showing that the party seeking discovery has substantial need of the materials in the preparation of this case and that he is unable without due hardship to obtain the substantial equivalent of the materials by other means.

10 C.F.R. § 2.705(b)(3). Section 2.705(b)(1), to which the above section refers, reads in applicable part, "[p]arties may obtain discovery regarding any matter, not privileged, that is relevant to the subject matter involved in the proceeding." *Id.* § 2.705(b)(1). This language was adapted from Federal Rule of Civil Procedure 26(b)(3), which itself was derived from the U.S. Supreme Court decision in *Hickman v. Taylor*, 329 U.S. 495 (1947). See *Georgia Power Co. (Vogle Electric Generating Plant, Units 1 and 2)*, LBP-93-18, 38 NRC 121, 123 (1993), citing *Commonwealth Edison Co. (Zion Station, Units 1 and 2)*, ALAB-196, 7 AEC 457, 460 (1974) and Advisory Committee Note to 1970 Amendments to Fed. R. Civ. P., 48 F.R.D. 459, 499 (1970). Thus, only a qualified work product immunity extends over material gathered or prepared by an attorney for use in litigation, either current or reasonably anticipated at a future time. *Texas Utilities Electric Co. (Comanche Peak Steam Electric Station, Units 1 and 2)* LBP-84-50, 20 NRC 1464, 1473-1474 (1984) (citing *Hickman v. Taylor*, 329 U.S. 495 (1947)).

Here, to the extent that documents or communications involving Mr. Shadis are claimed to be privileged, such privilege has not been established. In order for the privilege to exist, the document or communication in question must have (a) been prepared or made by a party or its representative, and (b) been prepared or made in anticipation of or for the hearing on this matter. 10 C.F.R. § 2.705(b)(3); *Judicial Watch, Inc. v. U.S. Postal Serv.*, 297 F. Supp. 2d 252, 269 (D.D.C. 2004). NEC has not even attempted to demonstrate that any of the documents that it has failed to disclose meets this two-part test. Thus, no protection based on privilege attaches to those documents and communications that NEC has failed to provide.⁶

III. BOARD INTERVENTION IS APPROPRIATE

The Board should order NEC to abide by the Commission's disclosure requirements. NEC's continuing failure to comply with 10 C.F.R. § 2.336 despite the Board's direction to do so is not justified. NEC has not offered any explanation of the gaps in its disclosures. There is no indication that NEC has sought to obtain relevant documents from its technical consultants (e.g., Mr. Blanch). It has not disclosed any document generated or communication made after October 17, 2004. It has provided no privilege logs with respect to the missing documents.⁷ This failure is unfair to Entergy and should not be permitted by the Board.

NEC Counsel's statements during the January 21, 2005, scheduling conference call all but admitted that NEC had failed to comply with the Commission disclosure requirements in its initial discovery disclosures. *See* Tr. 629 ("I am going to have to do now, I guess, is I'm going to have to get in touch with these people and ask them to provide me with whatever it is that they have left from the period of time prior to my becoming counsel with them, and then review all of

⁶ In any event, no privilege would attach to any of the communications between NEC or its consultants and Mr. David Lochbaum, who is not a consultant to NEC.

⁷ It bears emphasizing that, while Entergy waived the preparation by NEC of privilege logs regarding attorney-client and attorney work product documents generated after NEC retained counsel, it did not do so with respect to any other claims of privilege asserted by NEC.

it"). NEC made no attempt to explain why, despite obtaining representation from experienced counsel nearly three months before the disclosures were due, NEC was not able to fully meet its disclosure obligations, in particular providing privilege logs and disclosing relevant documents for all of its technical consultants.

NEC's Special Supplemental Disclosure failed to bring NEC into compliance with the Commission's rules. In addition to its participation in the proceeding, NEC has been a party since early in 2003 to the related State EPU proceeding. Yet, NEC certified on February 4, 2005, *inter alia*, that in that two year period: (1) Mr. Shadis, NEC's Staff Technical Advisor and NEC's principal representative in this and the State proceeding, produced not a single document, and only two emails, relevant to the admitted NEC contentions; (2) Mr. Blanch, one of NEC's two principal technical consultants, produced no relevant documents or emails;⁸ and (3) no person created or possessed any relevant document of any type that dated after October 17, 2004. NEC has provided nothing to explain such a dearth of relevant materials.⁹

The gaps in NEC's disclosures cannot be explained by a claim of privilege, which in any event has not been made. For example, NEC has long been involved with the assessment and litigation (in the State EPU proceeding) of issues relating to the cooling towers at VY. The documents and communications on this issue dating back at least two years should have been produced. They have not. The deficiencies in NEC's disclosure are, therefore, caused by NEC's failure to comply with the Commission's requirements, not by retention of purportedly privi-

⁸ Mr. Blanch's silence is surprising since he is copied on many of the emails NEC concedes are relevant. *See, e.g.*, Exh. 1 at NEC1SD # 9, 10, 12, 28, 38, 42, 43, 45-47, 50-52.

⁹ To the extent that any document not provided by NEC was prepared in connection with the State EPU proceeding or before the institution of the instant proceeding, such document is not protected by any privilege. *See* 10 C.F.R. §§ 2.740(b)(1), (3).

leged documents.¹⁰ In short, there is no basis for NEC's failure to make a full and complete disclosure of all relevant documents in its possession or control.

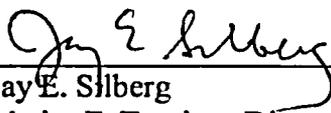
IV. CONCLUSION

For the reasons set forth above, Entergy requests that the Board order NEC to abide by the Commission's disclosure requirements and provide forthwith full disclosure of the documents and communications relevant to its admitted contentions in accordance with 10 C.F.R. § 2.336.

CERTIFICATION

In accordance with 10 C.F.R. § 2.323(b), counsel for Entergy has discussed this motion with counsel for NEC in an attempt to resolve this issue.

Respectfully submitted,



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Dated: February 14, 2005

¹⁰ In any event, as noted above, a party is required to provide a "list of documents otherwise required to be disclosed for which a claim of privilege or protected status is being made." 10 C.F.R. § 2.336(a)(3). NEC provided no list identifying any withheld documents, privileged or otherwise, beyond those contained in NEC's Special Supplemental Disclosure, Attachments 2 and 3. The failure to prepare a privilege log constitutes a waiver of the right to assert that documents are privileged. *Calabro v. Stone*, 225 F.R.D. 96, 98 (E.D.N.Y. 2004).

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NUCLEAR REGULATORY COMMISSION**

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ENTERGY NUCLEAR VERMONT)
YANKEE, LLC and ENTERGY)
NUCLEAR OPERATIONS, INC.)
(Vermont Yankee Nuclear Power Station))

) Docket No. 50-271

) ASLBP No. 04-832-02-OLA
) (Operating License Amendment)

CERTIFICATE OF SERVICE

I hereby certify that copies of "Entergy's Motion to Compel Discovery from the New England Coalition" were served on the persons listed below by deposit in the U.S. Mail, first class, postage prepaid and, where indicated by an asterisk, by electronic mail this 14th day of February, 2005.

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Douglas J. Rosinski

EXHIBIT 1

Date: October 13, 2003

To: "Raymond Shadis" <shadis@ime.net>

From: "Arnie Gundersen" <arniegundersen@sailchamplain.net>

Subject: 2nd day effort

Ray, new stuff is DARK

Rebuttal Outline VY

Physical deterioration of plant will adversely effect reliability

From the Entergy Nuclear Vermont Yankee Business Plan 2003 (April 2003, rev 1): "Lower costs translate into higher profits. With clear corporate and market expectations of ENN's contributions to earnings, a concentrated focus on lowering costs is required. Nuclear plants must have a low-cost position to remain competitive in an increasingly unregulated northeast market for electricity."

1. Feedwater pipe wear...Accelerated Corrosion Inspection Program, 1999 refueling outage inspection report, Feb 2000

On the method used, VY states "The wear rate calculations and projected times to code minimum are assumed to be linear. In fact they may not be..." (page 5). Page 8 continues "Feedwater piping from the feed pumps past the feed regulator valves...this section of the feedwater system has the highest ..operating pressure...there may be a small margin for wall loss due to flow accelerated corrosion. In addition to the limited margin, areas at counterbores for specific welds were originally fabricated with thicknesses close to code minimum wall thickness. Increased FAC wear rates are expected in the feedwater system and portions of the Heater Drain system." Page 9 states "the main area of concern is the feedwater system piping from the feed pumps past the feed regulator valves. Due to the design pressures and the installed wall thickness, this portion of the feedwater system has a relatively low margin for wall loss due to flow accelerated corrosion." NOTE: This is at present power not upgrade power.

It is important to note that this sampling program is only a statistical sampling which means that problems can still exist elsewhere. Page 9 states "Also, provision for procuring piping and fittings for replacement of selected components on short notice should be established". NOTE This indicates that the authors acknowledge how likely it is that a failure in this piping could occur. Page 10 expands on this argument by stating "The potential for finding significant wear in any piping component exists. Contingency planning as required for either repair or replacement of large bore components in the feedwater system should be considered." Page 10 also acknowledges that only a "...relatively small number of components inspected each outage."

In the 2002 Refueling Outage Report on Flow Accelerated Corrosion, page 9 states "...with future operation under GE hydrogen water chemistry, wear rates in the feedwater system and heater drain system are expected to increase. The feedwater system piping from the feed pumps past the regulator valves has a relatively low margin for wall loss due to flow accelerated corrosion."

NEC1SD# 1

Page 10 acknowledges that things will get worse with the proposed upgrade. "The planned power upgrade project underway at VY will require a complete review of program evaluations, piping modeling, and procedures to account for changes in equipment and flow regimes in plant piping systems. The review should be performed prior to the next refueling outage..." This recommendation was made in January of 2003, however no additional information regarding this program was provided in discovery seven months later.

In an email from Enrico Betti to Craig Nelson 4/16/03, Betti states "What this says to me is that the feedwater system has little or no reserve margin..."

Despite all these indications that the system is marginal even at VY's current power level, VY has chosen not to improve the system in any way. Specifically, in Jay Thayer's Prefiled Rebuttal Testimony, dated July 2, 2003, page 2, Mr. Thayer states that "...plant modifications that are necessary to achieve the power upgrade have been firmly established for months." And is attachment EN-JKT-10 to the same testimony entitled Vermont Yankee Power Upgrade Project Description a list of components planned to be changed is provided. There are no listings for the feedwater system. Based on this description, VY has no intention of making any improvements to the feedwater system.

2. Condenser tube Wear>

According to page 1 of the Vermont Yankee Nuclear Plant Condenser Evaluation, dated November 1999, but signed by Carl Kuester on March 9, 2000, VY planned that the condenser would last 12 more years, but only if power increased by a 5% or less and modifications were made. The Kuester study concluded that if all his recommendations were implemented (including \$ 85,000 upgraded inspections of tubes each refueling outage, epoxy coating of tube inlets and outlets for \$ 285,000). On page 26, Kuester concludes "If programs are formulated and acted upon, this condenser should be in satisfactory service in 2012 barring any unusual accident or occurrence not yet seen." ENVY provided no documentation that I am aware of to show that Kuester's recommendations were acted upon.

Had Kuester's recommended for epoxy coating of the tube inlet been implemented, this would reduce erosion. However, two years later in a 11/28/01 report to Marstaller from Zalewski section 1.1 notes that "Inlet end erosion is also present....While wall losses are not so severe to present an immediate hazard, the corrosion continues to grow." According to section 2.9 of this report, "The random stress cracking may be limiting factor in the remaining useful life of the brass condenser tubes." It also states that "The corrodent necessary to propagate these cracks has not been identified. Identifying and removing the corrodent is likelt to be the only way to interrupt the progression of the stress cracking..."

In a 2/7/02 memo from Betti to "File UND2002-042 07", entitled Condenser Long Term Plan, Betti states "VY has been fortunate to have our condenser tubes last 30 years." He also states "The current erosion inspection sample is too small." (This was Kuester's recommendation 3 years earlier). Both Betti and Kuester identify that it is important to note that any inspection program is only a statistical sampling which means that problems can still exists elsewhere. Also

three years after Kuester recommended epoxy coating, Betti states, "One preemptive measure to prevent continued tube end and tube sheet erosion would be epoxy coating...." He goes on to state "The coating....are better done soon before leaks occur." Betti then states "It is unlikely even with preemptive repairs the current tubes could be maintained long beyond 2012. Retubing as early as possible would reduce the risk of condenser leaks." Finally, if Figures 3 and 4 in Betti's Condenser Long Term Plan are any indication, VY has not accounted for power uprate. The projections of wear rates are linear, even after the proposed extended power uprate happens.

Even as of October 2002, ENVY was still contemplating Kuester's recommendation from 1999. Specifically, the "Record of the nineteenth Eddy Current Inspection, signed by Zalewski recommends epoxy coating the tube sheets and inlet tubes and increasing the inspection sample. ENVY provided nothing during discovery which indicated that any of these important recommendations which they have know about for four years have been acted upon.

Despite all these indications that the system is marginal even at VY's current power level, VY has chosen not to improve the system in any way. Specifically, in Jay Thayer's Prefiled Rebuttal Testimony, dated July 2, 2003, page 2 Mr. Thayer states that "...plant modifications that are necessary to achieve the power upgrade have been firmly established for months." And in attachment EN-JKT-10 to the same testimony entitled Vermont Yankee Power Upgrade Project Description a list of components planned to be changed is provided. There are no listings for the condenser system. Based on this description, VY has no intention of making any improvements to the condenser system.

3. Because the cooling towers are under sized for 120% power, the condenser backpressure will fluctuate as it has not in the past. This will be especially true in summer months when no heat can be dumped to the Connecticut River and all Cooling Tower cells are operating. This fluctuating pressure will increase the high cycle fatigue on the condenser tube sheet which is already damaged. From "Technical Evaluation No. TE 2001-047" approved by E Betti on 6/22/01, "The original Westinghouse condenser bracing system had deficiencies that (following 23 years of operation) contributed to a 6 foot crack in the A condenser.....Additional large cracks were found and repaired in the following refuel outage in the same location in the B condenser (1995)." The report goes on to say, "It should be noted that the original condenser welds were very poor.....These welds from the standpoint of ultimate strength under primary load standpoint can...support gravity and pressure loads from service conditions.....secondary loads are important from the standpoint of fatigue failure. Fortunately VY is a base load plant, and the pressurization cycles for the condenser will not likely exceed 200 cycles through the end of license." When this report was written, this may have been true, but the 120% upgrade introduces fatigue cycles which the author had not anticipated.

Despite all these indications that the system is marginal even at VY's current power level, VY has chosen not to improve the system in any way. Specifically, in Jay Thayer's Prefiled Rebuttal Testimony, dated July 2, 2003, page 2, Mr. Thayer states that "...plant modifications that are necessary to achieve the power upgrade have been firmly established for months." And in attachment EN-JKT-10 to the same testimony entitled Vermont Yankee Power Upgrade Project Description a list of components planned to be changed is provided. There are no listings for the

condenser tube sheet. Based on this description, VY has no intention of making any improvements to the condenser tube sheet.

4. The Quad Cities dryer first failed in June 2002. As early as 9/26/02, VY was aware that increasing the reactor flow would cause problems with the Steam Dryer. Rather than completely analyse the problem, in an unsigned, undated, untitled document provide in discovery reviewer Brian Hobbs was told “ ... add a statement justifying why expansion of the operating domain will not result in dryer component failures.” (The only available reference is 128/t0305, [REDACTED].)

I testified before the Board on June 19, and was unaware that the same dryer had failed a second time on June 11, 2003. In my oral testimony, I related problems which I had encountered on early BWR's wherein we had thought we had solved the problem, only to have it erupt again within a year. This is exactly what happened at Quad Cities, and what ENVY had denied could happen at Vermont Yankee. In fact, the second failure appears to be much worse than originally anticipated. According to NRC Information Notice 2002-26, supplement 1, dated July 21, 2003, “Inspection of the dryer revealed (1) through wall cracks (about 90 inches long) in the vertical and horizontal portions of the blank hood, 90 degree side, (2) one vertical and two diagonal braces detached..., (3) one severed internal brace..., and (4) three cracked tie bars. ... The licensee believes that the most probable cause of the failure is low frequency, high cycle fatigue driven by flow induced vibrations associated with higher steam flows present during EPU operating conditions.”

The Board is urged to remember that in 2002, Quad Cities told the NRC that the repairs would successfully solve the first failure. In the “Preliminary OE Report”, OE16403, the NRC states that after the first failure, “Several teams of Excelsior Nuclear, General Electric and industry experts are assembled to ... determine the ... corrective actions.” Despite this expert review, the dryer failed again and was much worse, less than a year later. The key statement from the latest NRC information notice is exactly what I had been trying to tell the Board in my oral testimony. “GE Nuclear Energy and the licensee did not foresee this phenomenon.” As Shakespeare would say, “There are more things in heaven and earth, Horatio, than are dreamt of in your philosophy.” When you push an old plant beyond what it was designed to perform, there will always be situations where VY “... did not foresee this phenomenon.”

ENVY Expert Witness Dodson (reliability expert) provides an exhibit highlighting the significance of the two events at Quad Cities. It is an Inside NRC newspaper article from June 30, 2003 which states that “fatigue relating to the age of the plant may have contributed to the crack.” By providing this exhibit, Dodson apparently supports the point I made in my oral testimony, when I stated that plants built when Lawrence Welk was on TV were more likely to experience failures.

Despite all these indications that the Dryer is marginal even at VY's current power level, VY has chosen not to improve the system in any way. Specifically, in Jay Thayer's Prefiled Rebuttal Testimony, dated July 2, 2003, attachment EN-JKT-10 is entitled Vermont Yankee Power

Upgrade Project Description. Based on this description, VY has no intention of making any improvements to the steam dryer system.

5. VY already has cracks in its steam dryer and surrounding area.

A. The 215 Dryer support bracket has had cracks since 1983 (Report of In-Vessel examination, March April 1995).

B. In 1999 three new cracks were identified in three of the Steam Dryer Jacking Bolts (144,215, and 324). (Vermont Yankee RFO 21,). Despite our discovery request, ENVY failed to provide section 2.4 of this report which discusses the magnitude of these cracks.

C. In the 2002 RFO 23 In-vessel Services Final Report, new debris was located on the 180 end of the Dryer Cover Plate. Despite our discovery request, ENVY failed to provide tab 9 of this report which discusses the magnitude of this debris.

Because ENVY failed to provide key pieces of information, I am forced to conclude that the trend is that failures in this area are continuing to grow.

There are weaknesses in the design basis documents

1. VY apparently did not know their plant had a 40 year life, as they asked why I stated a 40 year life in their discovery of me. They initially refused to provide us documents to prove our claim, then provided the documents with 146 key pages 'accidentally missing'. It was only after a detailed page count that we were able to identify the pages which would support our 40 year claim. The document VYC-378 supposedly contains 155 pages....even after we requested a full copy we only got 131 pages plus a 6 pages cover memo.. Page 1 of 6 of VYC- 378 states "This document contains 155 pages" but only 131 (plus 6) follow, or 137 pages. Where are the missing 18 pages? Are VY's files in such awful shape that they have lost this KEY documentation? I conclude that pieces of this KEY design basis document is missing, which shows a clear weakness in the design basis for the plant.

In a 131 page appendix to document VYC 378, dated December 14, 1987 and signed by Jay Thayer, on page 23 of 131, E. J. Betti states "...the reactor vessel was designed for the major transients that could occur during the plant 40 year life." NOTE, the text say PLANT lifetime, not reactor lifetime. Page 32 of 131 appears to be from the VY FSAR, and it states "...The reactor vessel is designed for a 40 year life..." Page 43 of 131 also states "...The reactor vessel is designed for a 40 year life..." Page 69 of 131 also states "...extrapolate to a 40 year life." This same page also states "The values shown for VY are projected annual frequency averaged over a 40 year plant lifetime." NOTE, the text say PLANT lifetime, not reactor lifetime. It is clear that VY had no knowledge of their FSAR or their design basis, which implies the need for a vertical slice of the plant's systems.

2. VY promised to inspect RR-44 hanger in their August 2001 ISI Summary Report to the NRC (BVY 01-66) Page 19 states that problems with hanger RR-44 will be "revisited" during the next refueling outage...HOWEVER, in the January 9 2003 ISI Summary Report to the NRC for

the next refueling outage(BVY 03-02), there is no reference that this hanger was ever reinspected. This is an indication that the commitment follow system does not work.

3. VY did not use the correct design basis when evaluating the control room habitability after an accident. They used 80 degrees when their design basis calls for 85 degrees...If they had used the correct numbers, they would have had to declare the system inoperable.....200 times in last 4 years the river temperature has exceeded 80 degrees

4. The PRA numbers for VY are way out of line with other reactors

5. [REDACTED]

6. In a private phone call to NRC (Telecon 1/8/03 9-10 AM) the NRC told Entergy that the GE Constant Power Upgrade Licensing Topical Report (CLTR) was "ambiguous" because GE had provided "a piece-meal safety analysis" and that there was "insufficient analysis information on which to judge a decision on public safety". The NRC told Entergy that when they talk to GE "Everytime we talk, the ambiguity gets larger". The NRC also told Entergy that GE "...assumes the staff can reach conclusions on public safety without having adequate analysis on how the plant will operate in the future." The NRC also told Entergy that GE had not "...integrated fuel, accidents, and transient analysis...", and that nothing was analysed in the CLTR unless the fuel was provided by GE. The NRC also told Entergy that "GE wants to carve everything into little pieces that are not analysed in an integrate fashion" The NRC told Entergy that GE was trying to get licensed power upgrades "ON THE CHEAP".

In a "Private and Confidential" memo date 12/18/02 Entergy's Don Leach told Entergy staffers that he had spoken to Jim Klapproth of GE. The memo says that Klapproth of GE was meeting with the NRC Chairman and commissioners on 1/22/03, and that if the NRC had not approved the GE report, Klapproth was "..going for the jugular" I conclude that General Electric is using threats to get approval of the CLRT.

There are significant differences between VY and other plants GE has licensed. In an internal memo from Robert Vita to VY staff on 12/19/02, Vita states, "Again, it appears that VY is not a "normal" plant when trying to bound us generically with other BWR-4s." There is no suggestion why Vita stated "AGAIN", but there must be many instances where VY does not fit the analysis that GE is trying to get the NRC to approve. In this memo, VY has discovered that its nuclear reactor has exceeded its ultimate design pressure under certain accidents at the 120% power level. Vita states that compared to other BWR-4, VY has low steam capacity and a different safety relief valve arrangement. Vita then states, "I am concerned that we are seeing VY challenge generic analysis previously performed by GE...I am not sure that the statements, engineering judgement or bounded by previous plant experience (sic), is acceptable for VY. "

Shine dose

We need to look at the dose conversion factor

Stone and Webster has made non-conservative assumptions in developing the transit time for the steam from the reactor to the steam turbine. In the July 31, 2003 transmittal, witness George Thomas states that calculation CYC -2298 was the basis for the new turbine "shine" dose which was first provided to the commission on XXXXXXXX. These calculations were completed on June 6, 2003. It is surprising that this data was calculated after ENVY provided supposed calculated dose values as part of these proceedings. The S&W calculations were based on an earlier calculation (Hansen to Strum 4/9/85). In the earlier calculations, a transit time of 3.6 seconds was determined, and there was considerable uncertainty even in that value. In 1985, Hansen stated "As can be seen from the above, there are not enough hard cold facts to base a calculation on." Despite the fact that Hansen calculated 3.6 seconds, on page 16 of the recent S&W report, S&W arbitrarily INCREASES the pre-EPU transit time to 4 seconds. This 11% increase is not conservative for two reasons. First, the longer the transit time the more N-16 will decay before reaching relatively unshielded areas in the turbine hall which decreases the calculated exposure. Second, the 1985 value was not based on "...hard, cold facts...". This mistake by S&W means that the predicted shine dose is approximately 16% lower than it should be. (The 16% is not linear with the 11% because of the exponential decay of N-16). This indicates a gross breakdown in the ENVY quality assurance system as well as a dose to the public which is not conservatively calculated.

I've not seen either calculation, but it sounds like they determine the shine dose based on N-16. Is the reactor assumed to be operating at, or close to, the technical specification limit on reactivity levels in the primary coolant? While this contribution is secondary to the N-16 contribution, it is not zero and would be non-conservative if ignored. Or, put another way, Vermont Yankee would be operating outside its design and licensing basis if it operated with fuel leakers when its safety studies assumed otherwise.

Cooling towers

From the Stone & Webster Evaporation Loss Study, Exhibit DEY-3, drift of 183 gallons per minute is stated twice on pages 4 & 7, at 120% power. Using elementary Algebra, this converts to 263,520 gallons per day. The calculation is provided below.

- 1) 183 gallons per minute x 60 = 10,980 gallons/hr.
- 2) 10,980 gallons per hour x 24 = 263,520 gallons/day.
- 3) 263,520 gallons per day/55 gallon drum = 4,791 drums/day.

This means that the surrounding community will be converted into swamp-like conditions, as almost Five Thousand 55 gallon drums of water will be dropped on them each day.

There is no way that 125 HP fans will cause a plume to be only 20 % bigger than now, which means waste heat will be dumped to the river....salmon issues and control room habitability issues....The river already hit 84.7 degrees, with this increased load, it will exceed its design basis

Control room habitability

Licensing basis The river already hit 84.7 degrees, with this increased load, it will exceed its design basis

Reliability

In the Prefiled Rebuttal Testimony of Edward Burns, ENVY's nuclear reliability expert states that as a result of the Power Upgrade, he would anticipate that the loss of availability of the VY unit as a result of the Power Upgrade will be 2%. Availability is defined in the NRC's gray book (NUREG-0020) as number of hours the reactor was critical divided by the number of hours in the period. If the availability is reduced by 2%, it means the reactor is not critical for a longer period of time, and hence not producing as much power. If the reactor is available 90% of the time, it is critical 328.5 days out of a 365 day period. If the reactor is available 2% less (88%), it is critical 321.2 days out of a 365 day period. In any event, 2% of 365 days is 7.3 additional days when VY will not be operating as a result of the power upgrade. Assuming for a moment that this 2% is correct, Wittness Sherman has calculated that a day of lost generation costs the ratepayers of Vermont \$88,000 based on \$50 per megawatt on the spot market. As I write this, the August spot market price is \$160. Multiplying 7.3 lost days times \$88,000 yeilds a loss to the Vermont ratepayers of \$642,000. If the plant breaks down for 7 days in August when the spot market is high, ratepayers will lose \$2,168,320. A summer breakdown is more likely, as that is the time of the year that cooling tower restraints place back presure on the condenser, which as shown elsewhere is already prone to failure. When the unit is running, Entergy collects significant revenues and pays the State approximately \$400,000. But because the unit will be less reliable, the rate payers will in fact be loosing at least \$220,000 each year (and quite possibly \$1,768,000) while VY continues to make significant revenues when it operates.

Wittness Connie Wells appears to agree with this lack of shared risk, with benefits accruing to ENVY. According to page 4 of the Prefiled Rebuttal Testimony of Connie Wells, "... VY's obligation is to provide power to VPNPC only when the VY station is producing power, and if for any reason the Station is not producing power, Entergy Nuclear VY has no obligation to obtain replacement power or otherwise indemnify VYNPC." However, in an attempt to distort this fact, Brian Cosgrove states in a memo on Public Relations Strategy, dated 4/29/2003, "Vermont ratepayers will have no economic risk" (August 1, 2003 transmittal to Shadis). Clearly, VY does not what the public to know how big a tab they are being asked to pick up.

The above analysis assumes that the 2% decrease in reliability calculated by Burns is correct. I believe this value is not correct for several reasons: First, Dodson provides an exhibit highlighting the significance of the two events at Quad Cities. It is an Inside NRC newspaper article from June 30, 2003 which states that "fatigue relating to the age of the plant may have contributed to the crack." By providing this exhibit, Dodson apparently supports the point I made in my oral testimony, when I stated that plants built when Lawrence Welk was on TV were more likely to experience failures.

Date: Wed, 14 Apr 2004 19:23:48 -0400

To: Lochbaum David <dlochbaum@ucsusa.org>, Blanch Paul <pmblanch@attbi.com>, Shadis Raymond <shadis@ime.net>

From: Arnie Gundersen <arniegundersen@sailchamplain.net>

X-ASG-Orig-Subj: worse than you think

Subject: worse than you think

[REDACTED]

Date: Thu, 15 Apr 2004 08:58:10 -0700 (PDT)
From: Arnie Gundersen <arniegundersen@sailchamplain.net>
Reply-To: arniegundersen@sailchamplain.net
X-ASG-Orig-Subj: Re: Houston, we have a problem
Subject: Re: Houston, we have a problem
To: Dave Lochbaum <dlochbaum@ucsusa.org>, pmlanch@attbi.com, shadis@ime.net,
arniegundersen@sailchamplain.net

--- Dave Lochbaum <dlochbaum@ucsusa.org> wrote:

> Hello Arnie:

>

>

> Dave

>

> >>> Arnie Gundersen <arniegundersen@sailchamplain.net> 04/15/04 05:53AM >>>

> > Re MSIV: SEE BELOW, Dave said "

> Begin forwarded message:

>

>> From: "Dave Lochbaum" <dlochbaum@ucsusa.org>

>> Date: April 8, 2004 12:54:11 PM EDT

>> To: <pmlanch@attbi.com>, <shadis@ime.net>, <arniegundersen@yahoo.com>

>> Cc: <mgundersen@sailchamplain.net>, <crisobl@sover.net>

>> Subject: Re: relief valves

>>

>> Hello Arnie:

>>

>

>> Thanks,

>> Dave

>>

NEC1SD# 10

>>>> Arnie Gundersen <arniegundersen@yahoo.com> 04/07/04 08:59PM >>>



Cc: Dave Lochbaum <dlochbaum@ucsusa.org>, pmb Blanch@attbi.com, shadis@ime.net
From: Arnie Gundersen <arniegundersen@sailchamplain.net>
X-ASG-Orig-Subj: Houston, we have a series of problems
Subject: Houston, we have a series of problems
Date: Fri, 16 Apr 2004 07:20:54 -0400
To: arniegundersen@sailchamplain.net



To: Shadis Raymond <shadis@ime.net>, David <dlochbaum@ucsusa.org>
From: Arnie Gundersen <arniegundersen@sailchamplain.net>
Subject: MSIV Leakage
Date: Fri, 2 July 2004

[REDACTED]

All Quotes fro VY report CR-VTY-2004-0917. May 5, 2004, 31 pages "MSIV As-Found LLRTs Show an Adverse Trend" Adverse Trend Common Cause Analysis

1. The PROBLEM in VY's eyes: Since 1973, there have been 14 LLRT MSIV test failures... 4 failures in the first 23 years from 1973-1996... THEN 10 FAILURES IN THE LAST 8 YEARS. Why? "The low incidence of MSIV failures prior to 1996 is ... the result of non-conservative test method.... The validity of this method relies on a number of assumptions that could not be verified..." (Page 11) "The As Found LLRT history for MSIVs shows an adverse trend over the past four refueling outages. In RFO-21, there were zero; in RFO -22 there was one: In RFO 23 there were two; in RFO-24 there were three." (Page 1)

2. The Solution in VY's eyes: "Implementation of higher MSIV LLRT leakage limits in accordance with the pending alternate source term license amendment." (Page 2)

3. The REAL problem.... The existing MSIVs really are not up to the task. "... there is also a consensus that the Wye pattern globe valve is less than optimal from a design and application point of view..." (Page 12) Also, "...the seating force in the MSIVs is marginal..." (Page 8)

4. The Problem will get worse with the Uprate. "Flow induced damage can include valve stem bending valve stem disc separation and damage to the guide ribs." (Page 27)

5. MY CONCLUSIONS:

A. The VY proposal to increase the allowable MSIV leakage will result in a reduction in safety margin even at the present power level.

B. The safety margin will be further reduced with increased flow from the Uprate.

C. In RFO -21, the identical test resulted in NO DEFICIENCIES. In RFO- 22, there was only one deficiencies. The problem is not that the test is a poor one. The problem is that as the plant ages, the valve leakage is increasing. It is a classic bathtub curve with increasing deficiencies each outage as the plant gets older. VY is trying to sweep an age relate problem under the rug by changing the test. The test is fine, as indicated by excellent results in RFO-21 and RFO-22. The plant is getting old and the valve design was marginal in the first place.

[REDACTED]

Arnie

Date: Fri, 2 Jul 2004 13:18:55 -0400

From: Arnie Gundersen <arniegundersen@adelphia.net>

Cc: Lochbaum David <dlochbaum@ucsusa.org>, Alexander Peter <crisobl@sover.net>

To: Shadis Raymond <shadis@ime.net>, Alexander Peter <crisobl@sover.net>

X-ASG-Orig-Subj: Missing records at VY

Subject: Missing records at VY

1. The original seismic analysis of the safety related cooling tower was done by Fluor before the plant was built. An undated attachment to an email from Dan Yasi dated 12/6/02 states (Bates CT00205 and 206), "There is no documentation of the calculation of the loads used for the analysis or a comparison of the calculated loads to allowable loads."

2. MR 83-2055 modified the Cooling towers in 1983. An attachment to an email from Dan Yasi dated 12/6/02 states (Bates CT00206), "I am not able to locate any analysis associated with these modifications to determine what force would cause the ties to break."

3. MR 8-0635 and 0636 again modified the cooling towers in 1985. An attachment to an email from Dan Yasi dated 12/6/02 states (Bates CT 00206), "Again, I was not able to locate any analysis associated with these modifications."

In prior testimony, I noted documentation and record retention problems associated with the 1986 CB&I report on the 40 year design life of the plant. Since testifying, of course there has been the missing fuel rod documentation problem (1979 +) as well as 20 undocumented cracks in the steam dryer, which VY has stated may have been there since the plant was built.

The common thread for all these documentation issues is that all of them occurred a long time ago. If the original design basis of the plant cannot be found, it is difficult to predict the future performance of said plant. "Houston, we have a problem."

Date: Fri, 2 Jul 2004 15:21:13 -0400
To: "Dave Lochbaum" <dlochbaum@ucsusa.org>
Cc: <shadis@ime.net>, <crisobl@sover.net>
From: Arnie Gundersen <arniegundersen@adelphia.net>
X-ASG-Orig-Subj: Re: Missing records at VY
Subject: Re: Missing records at VY

Dave,

[REDACTED]

On Jul 2, 2004, at 3:15 PM, Dave Lochbaum wrote:

Hello Arnie:

[REDACTED]

Thanks,
Dave

To: Arnie Gundersen <arniegundersen ...snip... Lochbaum" <dlochbaum@ucsusa.org>
From: Raymond Shadis <shadis@prexar.com>
Subject: Re: Missing records at VY
Cc: <shadis@ime.net>, <crisobl@sover.net>
Date: Sat, 3 July 2004



To: Shadis Raymond <shadis@ime.net>,
Gundersen Margaret <mgundersen@sailchamplain.net>
From: Arnie Gundersen <arniegundersen@adelphia.net>
X-ASG-Orig-Subj: Hot Off The Press
Subject: Hot Off The Press
Date: Sun, 4 Jul 2004 22:18:48 -0400

ATTACHMENT

After my prefiled testimony was submitted for the July 8 hearing, ENVY provided xxx pounds of discovery material which support conclusions of my previously prefiled testimony on this docket and specifically supported my prefiled testimony on the issue of the cooling tower uprate. My conclusions based on this newly provided ENVY material are listed below:

Conclusion 1 Two previous failures

The VY towers have had structural problems in the past. Preventative Maintenance Basis Document M307, rev 6, Bates CT 00983 states that in the summer of 1994, a column failed which resulted in improvements in inspection procedures to prevent similar occurrences. The 1994 CAR notes that "...the subject columns are in high stress areas where we have experienced degradation over time." Again in 1997, a column failed in CT-2-1. This second failure was attributed to weak inspection procedures.

Conclusion 2: Seismic Analysis

The new information provided by ENVY indicates that ENVY has already recognized the need for a structural analysis as I recommended, but as of now, ENVY has failed to act on that recognized need.

A. An incomplete structural analysis performed in 1986 which indicates "... that several members are slightly overloaded, but were deemed acceptable, and others were within 10% of allowable load. A check of the loads at the anchor bolts is not included in the report. (Bates CT00206)

B. In an email dated 6/4/04, Yasi to Thomas et al, "Subject:Summary of Request for VY CT uprate", Bates CT00208,it states, "Please include any cost or other issues that will be involved in confirming the upgrade will not impact the Seismic qualification of the 2 seismic cells. Please include your judgement as to any seismic modifications required to maintain the seismic qualification."

In a email dated June 8, 2004, George Thomas to Mike Tessier, there is an attached Tower Performance Incorporated report (Bates CT00238 through 00240) which states, "Additional uncertainties already mentioned are the changes that may be required to the cooling tower

structure. The cost of a structural evaluation by a professionally licensed structural engineer must be included."

An unnamed Marley Cooling Technologies to S&W document dated 6/25/04 (Bates CT 00210) states, "Please include any cost or other issue that will be involved in confirming the uprate will not impact the seismic cells..... A full structural evaluation (computer generated) will run approximately \$25,000 including a site/tower inspection by licensed professional engineers from our engineering group. Note: The current design code may be different from that used in the original design of the tower(s)."

Email, Thomas to Yasi, 6/22/04, Bates CT00137, "we need to determine the extent of the cell 2-1 and 2-2 mods and make an assessment with Construction as to whether they can be installed in a seven day LCO. Jay needs to be briefed on this prior to his testimony on July 8. This is followed on the same page by an update from Yasi: "George has initiated a Requisition to Marley for Structural Engr to come on site, walkdown tower, and assist in identifying any structural/seismic impacts associated with upgrade."

Conclusion 3: Records Retention

In my review of VY records in support of NEC in the Uprate Hearings, I have discovered a disturbing trend in the area of RECORD RETENTION for safety related items:

- A. The original seismic analysis of the safety related cooling tower was done by Fluor before the plant was built. An undated attachment to an email from Dan Yasi dated 12/6/02 states (Bates CT00205 and 206), "There is no documentation of the calculation of the loads used for the analysis or a comparison of the calculated loads to allowable loads."
- B. MR 83-2055 modified the Cooling towers in 1983. An attachment to an email from Dan Yasi dated 12/6/02 states (Bates CT00206), "I am not able to locate any analysis associated with these modifications to determine what force would cause the ties to break."
- C. MR 8-0635 and 0636 again modified the cooling towers in 1985. An attachment to an email from Dan Yasi dated 12/6/02 states (Bates CT 00206), "Again, I was not able to locate any analysis associated with these modifications."

In prior testimony, I noted documentation and record retention problems associated with the 1986 CB&I report on the 40 year design life of the plant.

Since testifying, of course there has been the missing fuel rod documentation problem (1979 +) as well as 20 undocumented cracks in the steam dryer, which VY has stated may have been there since the plant was built.

The common thread for all these documentation issues is that all of them occurred a long time ago. If the original design basis of the plant can not be found, it is difficult to predict the future performance of said plant. In October 1996, the NRC sent VYNPC a letter requiring a response in accordance with 10 CFR 50.54(f) regarding the adequacy and availability of design basis

information. One wonders how VY's licensee could have told NRC then that it had design basis information under control and tell folks now that some information is unavailable.

Conclusion 4 Excess weight from flooded drift eliminators

A. Technical Review of Cooling Tower Upgrade Design Studies, By Robert Fulkerson, February 18, 2003, Recommendations (Bates CT00659) states, The drift eliminators in the towers are the original HY-V eliminators. If the increase in the If the increase in airflow through the towers draws excessive water droplets into the drift eliminators, they may become flooded and unable to drain properly. If this occurs, it may be necessary to replace the drift eliminators

B. In a email dated June 8, 2004, George Thomas to Mike Tessier, there is an attached Tower Performance Incorporated report (Bates CT00238 through 00240) which states, "Another possibility that may arise.... Is an increase in drift leaving the tower.. However, the drift eliminators presently in the cooling towers are not the most efficiently designed drift eliminator available. An increase in air velocity through the drift eliminators will result in an increase of drift leaving the cooling tower. The amount of the increase cannot be calculated as performance information for these drift eliminators is unavailable. A large increase in drift could result in damage to the cooling tower fans, as well as affecting the area surrounding the cooling tower."

Conclusion 5 Age Related Problems

A. An undated Project Definition Document , page 8, (bates CT00010) states, " It is recognized that the existing MCC's have been in operation for approximately 35 years and obsolescence is an issue. Also with age comes increased maintenance..... The modification will be an expensive process and when done, VY will be left with aging equipment."

B. Email from Wonderlick to Kowal et al, June 10, 2004 Bates CT00114, states, "The latest readings, while still acceptable, indicate that the cable insulation is weakening"

Date: Mon, 4 Aug 2003 21:42:43 -0400

Reply-To: "Arnie Gundersen" <arniegundersen@sailchamplain.net>

From: "Arnie Gundersen" <arniegundersen@sailchamplain.net>

To: "David Lochbaum" <dlochbaum@ucsusa.org>, "Raymond Shadis" <shadis@ime.net>

Subject: Cold, hard facts

Stone and Webster has made non-conservative assumptions in developing the transit time for the steam from the reactor to the steam turbine. In the July 31, 2003 transmittal, witness George Thomas states that calculation CYC -2298 was the basis for the new turbine "shine" dose which was first provided to the commission on XXXXXXXX. These S&W calculations were completed on June 6, 2003. It is surprising that this data was calculated after ENVY provided supposed calculated dose values as part of these proceedings. The S&W calculations were based on an earlier calculation (Hansen to Strum 4/9/85). In the earlier calculations, a transit time of 3.6 seconds was determined, and there was considerable uncertainty even in that value. In 1985, Hansen stated "As can be seen from the above, there are not enough hard cold facts to base a calculation on." Despite the fact that Hansen calculated 3.6 seconds, on page 16 of the recent S&W report, S&W used this report which lacked "...cold, hard facts.." and then arbitrarily INCREASED the pre-EPU transit time to 4 seconds. This is not conservative for two reasons. First, the longer the transit time the more N 16 will decay before reaching relatively unshielded areas in the turbine hall which decreases the calculated exposure. Second, the 1985 value was not based on "...hard, cold facts...". This indicates a gross breakdown in the ENVY quality assurance system as well as a dose to the public which is not conservatively calculated.

Date: Tue, 5 Aug 2003 23:12:18 -0400
Reply-To: "Arnie Gundersen" <arniegundersen@sailchamplain.net>
From: "Arnie Gundersen" <arniegundersen@sailchamplain.net>
To: "Raymond Shadis" <shadis@ime.net>
Subject: Goodnight

Rebuttal Outline VY

Physical deterioration of plant will adversely effect reliability

From the Entergy Nuclear Vermont Yankee Business Plan 2003 (April 2003, rev 1): "Lower costs translate into higher profits. With clear corporate and market expectations of ENN's contributions to earnings, a concentrated focus on lowering costs is required. Nuclear plants must have a low-cost position to remain competitive in an increasingly unregulated northeast market for electricity."

1. Feedwater pipe wear...Accelerated Corrosion Inspection Program, 1999 refueling outage inspection report, Feb 2000

On the method used, VY states "The wear rate calculations and projected times to code minimum are assumed to be linear. In fact they may not be..." (page 5). Page 8 continues "Feedwater piping from the feed pumps past the feed regulator valves...this section of the feedwater system has the highest ..operating pressure...there may be a small margin for wall loss due to flow accelerated corrosion. In addition to the limited margin, areas at counterbores for specific welds were originally fabricated with thicknesses close to code minimum wall thickness. Increased FAC wear rates are expected in the feedwater system and portions of the Heater Drain system." Page 9 states" the main area of concern is the feedwater system piping from the feed pumps past the feed regulator valves. Due to the design pressures and the installed wall thickness, this portion of the feedwater system has a relatively low margin for wall loss due to flow accelerated corrosion." NOTE: This is at present power not upgrade power.

It is important to note that this sampling program is only a statistical sampling which means that problems can still exist elsewhere. Page 9 states "Also, provision for procuring piping and fittings for replacement of selected components on short notice should be established". NOTE This indicates that the authors acknowledge how likely it is that a failure in this piping could occur. Page 10 expands on this argument by stating "The potential for finding significant wear in any piping component exists. Contingency planning as required for either repair or replacement of large bore components in the feedwater system should be considered." Page 10 also acknowledges that only a "...relatively small number of components inspected each outage."

In the 2002 Refueling Outage Report on Flow Accelerated Corrosion, page 9 states "..with future operation under GE hydrogen water chemistry, wear rates in the feedwater system and heater drain system are expected to increase. The feedwater system piping from the feed pumps

past the regulator valves has a relatively low margin for wall loss due to flow accelerated corrosion."

Page 10 acknowledges that things will get worse with the proposed upgrade. "The planned power upgrade project underway at VY will require a complete review of program evaluations, piping modeling, and procedures to account for changes in equipment and flow regimes in plant piping systems. The review should be performed prior to the next refueling outage..." This recommendation was made in January of 2003, however no additional information regarding this program was provided in discovery seven months later.

In an email from Enrico Betti to Craig Nelson 4/16/03, Betti states "What this says to me is that the feedwater system has little or no reserve margin..."

Despite all these indications that the system is marginal even at VY's current power level, VY has chosen not to improve the system in any way. Specifically, in Jay Thayer's Prefiled Rebuttal Testimony, dated July 2, 2003, page 2, Mr. Thayer states that "...plant modifications that are necessary to achieve the power upgrade have been firmly established for months." And is attachment EN-JKT-10 to the same testimony entitled Vermont Yankee Power Upgrade Project Description a list of components planned to be changed is provided. There are no listings for the feedwater system. Based on this description, VY has no intention of making any improvements to the feedwater system.

2. Condenser tube Wear>

According to page 1 of the Vermont Yankee Nuclear Plant Condenser Evaluation, dated November 1999, but signed by Carl Kuester on March 9, 2000, VY planned that the condenser would last 12 more years, but only if power increased by a 5% or less and modifications were made. The Kuester study concluded that if all his recommendations were implemented (including \$ 85,000 upgraded inspections of tubes each refueling outage, epoxy coating of tube inlets and outlets for \$ 285,000). On page 26, Kuester concludes "If programs are formulated and acted upon, this condenser should be in satisfactory service in 2012 barring any unusual accident or occurrence not yet seen." ENVY provided no documentation that I am aware of to show that Kuester's recommendations were acted upon.

Had Kuester's recommended for epoxy coating of the tube inlet been implemented, this would reduce erosion. However, two years later in a 11/28/01 report to Marstaller from Zalewski. section 1.1 notes that "Inlet end erosion is also present....While wall losses are not so severe to present an immediate hazard, the corrosion continues to grow." According to section 2.9 of this report, "The random stress cracking may be limiting factor in the remaining useful life of the brass condenser tubes." It also states that "The corrodent necessary to propagate these cracks has not been identified. Identifying and removing the corrodent is likelt to be the only way to interrupt the progression of the stress cracking..."

In a 2/7/02 memo from Betti to "File UND2002-042 07", entitled Condenser Long Term Plan, Betti states "VY has been fortunate to have our condenser tubes last 30 years." He also states "The current erosion inspection sample is too small." (This was Kuester's recommendation 3

years earlier). Both Betti and Kuester identify that it is important to note that any inspection program is only a statistical sampling which means that problems can still exist elsewhere. Also three years after Kuester recommended epoxy coating, Betti states, "One preemptive measure to prevent continued tube end and tube sheet erosion would be epoxy coating...." He goes on to state "The coating....are better done soon before leaks occur." Betti then states "It is unlikely even with preemptive repairs the current tubes could be maintained long beyond 2012. Retubing as early as possible would reduce the risk of condenser leaks." Finally, if Figures 3 and 4 in Betti's Condenser Long Term Plan are any indication, VY has not accounted for power uprate. The projections of wear rates are linear, even after the proposed extended power uprate happens.

Even as of October 2002, ENVY was still contemplating Kuester's recommendation from 1999. Specifically, the "Record of the nineteenth Eddy Current Inspection, signed by Zalewski recommends epoxy coating the tube sheets and inlet tubes and increasing the inspection sample. ENVY provided nothing during discovery which indicated that any of these important recommendations which they have known about for four years have been acted upon.

Despite all these indications that the system is marginal even at VY's current power level, VY has chosen not to improve the system in any way. Specifically, in Jay Thayer's Prefiled Rebuttal Testimony, dated July 2, 2003, page 2 Mr. Thayer states that "...plant modifications that are necessary to achieve the power upgrade have been firmly established for months." And in attachment EN-JKT-10 to the same testimony entitled Vermont Yankee Power Upgrade Project Description a list of components planned to be changed is provided. There are no listings for the condenser system. Based on this description, VY has no intention of making any improvements to the condenser system.

3. Because the cooling towers are under sized for 120% power, the condenser backpressure will fluctuate as it has not in the past. This will be especially true in summer months when no heat can be dumped to the Connecticut River and all Cooling Tower cells are operating. This fluctuating pressure will increase the high cycle fatigue on the condenser tube sheet which is already damaged. From "Technical Evaluation No. TE 2001-047" approved by E Betti on 6/22/01, "The original Westinghouse condenser bracing system had deficiencies that (following 23 years of operation) contributed to a 6 foot crack in the A condenser....Additional large cracks were found and repaired in the following refuel outage in the same location in the B condenser (1995)." The report goes on to say, "It should be noted that the original condenser welds were very poor.....These welds from the standpoint of ultimate strength under primary load standpoint can...support gravity and pressure loads from service conditions.....secondary loads are important from the standpoint of fatigue failure. Fortunately VY is a base load plant, and the pressurization cycles for the condenser will not likely exceed 200 cycles through the end of license." When this report was written, this may have been true, but the 120% upgrade introduces fatigue cycles which the author had not anticipated.

Despite all these indications that the system is marginal even at VY's current power level, VY has chosen not to improve the system in any way. Specifically, in Jay Thayer's Prefiled Rebuttal Testimony, dated July 2, 2003, page 2, Mr. Thayer states that "...plant modifications that are necessary to achieve the power upgrade have been firmly established for months." And in attachment EN-JKT-10 to the same testimony entitled Vermont Yankee Power Upgrade Project

Description a list of components planned to be changed is provided. There are no listings for the condenser tube sheet. Based on this description, VY has no intention of making any improvements to the condenser tube sheet.

4. Quad Cities steam dryer failure is "age related". Nothing was provided to indicate that any lessons learned from Quad have been factored into the VY design

Despite all these indications that the system is marginal even at VY's current power level, VY has chosen not to improve the system in any way. Specifically, in Jay Thayer's Prefiled Rebuttal Testimony, dated July 2, 2003, attachment EN-JKT-10 is entitled Vermont Yankee Power Upgrade Project Description. Based on this description, VY has no intention of making any improvements to the steam dryer system.

5. VY already has cracks in its steam dryer and surrounding area.

A. The 215 Dryer support bracket has had cracks since 1983 (Report of In-Vessel examination, March April 1995).

B. In 1999 three new cracks were identified in three of the Steam Dryer Jacking Bolts (144,215, and 324). (Vermont Yankee RFO 21,). Despite our discovery request, ENVY failed to provide section 2.4 of this report which discusses the magnitude of these cracks.

C. In the 2002 RFO 23 In-vessel Services Final Report, new debris was located on the 180 end of the Dryer Cover Plate. Despite our discovery request, ENVY failed to provide tab 9 of this report which discusses the magnitude of this debris.

Because ENVY failed to provide key pieces of information, I am forced to conclude that the trend is that failures in this area are continuing to grow.

There are weaknesses in the design basis documents

1. VY apparently did not know their plant had a 40 year life, as they asked why I stated a 40 year life in their discovery of me. They initially refused to provide us documents to prove our claim, then provided the documents with 146 key pages 'accidentally missing'. It was only after a detailed page count that we were able to identify the pages which would support our 40 year claim. The document VYC-378 supposedly contains 155 pages....even after we requested a full copy we only got 131 pages plus a 6 pages cover memo.. Page 1 of 6 of VYC- 378 states "This document contains 155 pages" but only 131 (plus 6) follow, or 137 pages. Where are the missing 18 pages? Are VY's files in such awful shape that they have lost this KEY documentation? I conclude that pieces of this KEY design basis document is missing, which shows a clear weakness in the design basis for the plant.

In a 131 page appendix to document VYC 378, dated December 14, 1987 and signed by Jay Thayer, on page 23 of 131, E. J. Betti states "...the reactor vessel was designed for the major transients that could occur during the plant 40 year life." NOTE, the text say PLANT lifetime, not reactor lifetime. Page 32 of 131 appears to be from the VY FSAR, and it states ""The reactor vessel is designed for a 40 year life..." Page 43 of 131 also states ""The reactor vessel

is designed for a 40 year life..." Page 69 of 131 also states "...extrapolate to a 40 year life." This same page also states "They values shown for VY are projected annual frequency averaged over a 40 year plant lifetime." NOTE, the text say PLANT lifetime, not reactor lifetime. It is clear that VY had no knowledge of their FSAR or their design basis, which implies the need for a vertical slice of the plant's systems.

2. VY promised to inspect RR-44 hanger in their August 2001 ISI Summary Report to the NRC (BVG 01-66) Page 19 states that problems with hanger RR-44 will be "revisited" during the next refueling outage...HOWEVER, in the January 9 2003 ISI Summary Report to the NRC for the next refueling outage(BVG 03-02), there is no reference that this hanger was ever reinspected. This is an indication that the commitment follow system does not work.

3. VY did not use the correct design basis when evaluating the control room habitability after an accident. They used 80 degrees when their design basis calls for 85 degrees...If they had used the correct numbers, they would have had to declare the system inoperable.....200 times in last 4 years the river temperature has exceeded 80 degrees

4. The PRA numbers for VY are way out of line with other reactors

5. We need to get the statement in here about venting when the wind is blowing toward Canada to show lack of safety ethic

6. In a private phone call to NRC (Telecon 1/8/03 9-10 AM) the NRC told Entergy that the GE Constant Power Upgrade Licensing Topical Report (CLTR) was "ambiguous" because GE had provided "a piece-meal safety analysis" and that there was "insufficient analysis information on which to judge a decision on public safety". The NRC told Entergy that when they talk to GE "Everytime we talk, the ambiguity gets larger". The NRC also told Entergy that GE "...assumes the staff can reach conclusions on public safety without having adequate analysis on how the plant will operate in the future." The NRC also told Entergy that GE had not "...integrated fuel, accidents, and transient analysis...", and that nothing was analysed in the CLTR unless the fuel was provided by GE. The NRC also told Entergy that "GE wants to carve everything into little pieces that are not analysed in an integrate fashion" The NRC told Entergy that GE was trying to get licensed power upgrades "ON THE CHEAP".

In a "Private and Confidential" memo date 12/18/02 Entergy's Don Leach told Entergy staffers that he had spoken to Jim Klapproth of GE. The memo says that Klapproth of GE was meeting with the NRC Chairman and commissioners on 1/22/03, and that if the NRC had not approved the GE report, Klapproth was "...going for the jugular" I conclude that General Electric is using threats to get approval of the CLTR.

There are significant differences between VY and other plants GE has licensed. In an internal memo from Robert Vita to VY staff on 12/19/02, Vita states, "Again, it appears that VY is not a "normal" plant when trying to bound us generically with other BWR-4s." There is no suggestion why Vita stated "AGAIN", but there must be many instances where VY does not fit the analysis that GE is trying to get the NRC to approve. In this memo, VY has discovered that its nuclear reactor has exceeded its ultimate design pressure under certain accidents at the 120%

power level. Vita states that compared to other BWR-4, VY has low steam capacity and a different safety relief valve arrangement. Vita then states, "I am concerned that we are seeing VY challenge generic analysis previously performed by GE....I am not sure that the statements, engineering judgement or bounded by previous plant experience (sic), is acceptable for VY. "

Shine dose

We need to look at the dose conversion factor

Stone and Webster has made non-conservative assumptions in developing the transit time for the steam from the reactor to the steam turbine. In the July 31, 2003 transmittal, witness George Thomas states that calculation CYC -2298 was the basis for the new turbine "shine" dose which was first provided to the commission on XXXXXXXXX. These calculations were completed on June 6, 2003. It is surprising that this data was calculated after ENVY provided supposed calculated dose values as part of these proceedings. The S&W calculations were based on an earlier calculation (Hansen to Strum 4/9/85). In the earlier calculations, a transit time of 3.6 seconds was determined, and there was considerable uncertainty even in that value. In 1985, Hansen stated "As can be seen from the above, there are not enough hard cold facts to base a calculation on." Despite the fact that Hansen calculated 3.6 seconds, on page 16 of the recent S&W report, S&W arbitrarily INCREASES the pre-EPU transit time to 4 seconds. This is not conservative for two reasons. First, the longer the transit time the more N 16 will decay before reaching relatively unshielded areas in the turbine hall which decreases the calculated exposure. Second, the 1985 value was not based on ".hard, cold facts...". This indicates a gross breakdown in the ENVY quality assurance system as well as a dose to the public which is not conservatively calculated.

I've not seen either calculation, but it sounds like they determine the shine dose based on N-16. Is the reactor assumed to be operating at, or close to, the technical specification limit on reactivity levels in the primary coolant? While this contribution is secondary to the N-16 contribution, it is not zero and would be non-conservative if ignored. Or, put another way, Vermont Yankee would be operating outside its design and licensing basis if it operated with fuel leakers when its safety studies assumed otherwise.

Cooling towers

Stone & Webster Evaporation Loss Study, Exhibit DEY-3, pages 4 & 7, Drift
183 gpm total, based upon 0.05% of total circulating water flow of 366,000gpm:

- 1) 183 gallons per minute x 60 = 10,980 gallons/hr.
- 2) 10,980 gallons per hour x 24 = 263,520 gallons/day.
- 3) 263,520 gallons per day/55 gallon drum = 4,791 drums/day. ("...nearly five thousand 55-gallon drums of water per day. Five thousand.")

There is no way that 125 HP fans will cause a plume to be only 20 % bigger than now, which means waste heat will be dumped to the river....salmon issues and control room habitability issues....The river already hit 84.7 degrees, with this increased load, it will exceed its design basis

Control room habitability

Licensing basis The river already hit 84.7 degrees, with this increased load, it will exceed its design basis

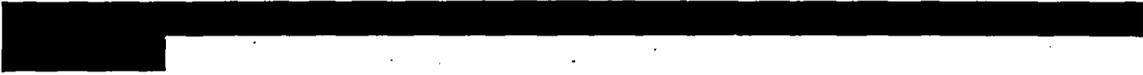
Reliability

Availability is defined in the NRC's gray book (NUREG-0020) as number of hours the reactor was critical divided by the number of hours in the period. If the availability is reduced by 2%, it means the reactor is not critical more. If the reactor is available 90% of the time, it is critical 328.5 days out of a 365 day period. If the reactor is available 2% less (88%), it is critical 321.2 days out of a 365 day period.

The difference is your 7 days.

According to a Brian Cosgrove telecom dated 4/29/2003, "Vermont ratepayers will have no economic risk" (August 1, 2003 transmittal to Shadis)

To: Shadis Raymond <shadis@ime.net>, Blanch Paul <pmblanch@attbi.com>, Alexander Peter <crisobl@sover.net> From: Arnie Gundersen <arniegundersen@sailchamplain.net>
X-ASG-Orig-Subj: NRC ideas
Subject: NRC ideas
Date: Wed, 18 Aug 2004 11:25:38 -0400



Date: Mon, 23 Aug 2004 20:22:23 -0400
To: Shadis Raymond <shadis@ime.net>
From: Arnie Gundersen <arniegundersen@adelphia.net>
X-ASG-Orig-Subj: Fwd: Condenser problems
Subject: Fwd: Condenser problems

Begin forwarded message:

From: Arnie Gundersen <arniegundersen@adelphia.net>
Date: August 16, 2004 5:51:51 PM EDT
To: Shadis Raymond <shadis@ime.net>, Alexander Peter <crisobl@sover.net>
Cc: Lochbaum David <dlochbaum@ucsusa.org>, Blanch Paul <pmblanch@attbi.com>
Subject: Condenser problems

Ray,

This is my prefiled testimony from August (2003) relating to condenser problems at VY. The [BOLD CAPITAL LETTER AREA] says the condenser is lucky to just withstand gravity. Remember, condensers are designed to withstand vacuum, not be positively pressurized as assumed in the AST. Given what Betti has to say, I cannot understand how they think the condenser can withstand a positive pressure for the AST portion of the Uprate.... This is a good issue to attack on when pursuing the NRC appeal.

Arnie

Q 5 Please give another example of a component likely to have an adverse effect on reliability under extended power uprate conditions.

Response: Another outstanding example of a worn component that is not likely to withstand the stresses of extended power uprate through end of license in 2012 is the steam condenser. According to page 1 of the Vermont Yankee Nuclear Plant Condenser Evaluation, dated November 1999, but signed by Carl Kuester on March 9, 2000, VY planned that the condenser would last 12 more years, but only if power increased by a 5% or less and modifications (beyond the presently planned, tube staking) were made. The Kuester study concluded that if all his recommendations were implemented (including upgraded inspections of tubes each refueling outage, epoxy coating of tube inlets and outlets for \$ 285,000, *and tube staking*). On page 26, Kuester concludes If programs are formulated and acted upon, this condenser should be in satisfactory service in 2012 barring any unusual accident or occurrence not yet seen. ENVY provided no documentation that I am aware of to show that Kuesters recommendations were acted upon.

Had Kuesters recommended for epoxy coating of the tube inlet been implemented, this would reduce erosion. However, two years later in a 11/28/01 report to Marstaller from Zalewski, section 1.1 notes that Inlet end erosion is also present. While wall losses are not so severe to present an immediate hazard, the corrosion continues to grow. According to section 2.9 of this report, The random stress cracking may be limiting factor in the remaining useful life of the brass condenser tubes. It also states that The corrodent necessary to propagate these cracks has not been identified. Identifying and removing the corrodent is likely to be the only way to interrupt the progression of the stress cracking

In a 2/7/02 memo from Betti to File UND2002-042 07, entitled Condenser Long Term Plan, Betti states VY has been fortunate to have our condenser tubes last 30 years. He also states The current erosion inspection sample is too small. (This was Kuesters recommendation 3 years earlier).

Both Betti and Kuester identify that it is important to note that any inspection program is only a statistical sampling which means that problems can still exist elsewhere. Also three years after Kuester recommended epoxy coating, Betti states, One preemptive measure to prevent continued tube end and tube sheet erosion would be epoxy coating. He goes on to state The coating(is) better done soon before leaks occur.

Betti then states, It is unlikely even with preemptive repairs the current tubes could be maintained long beyond 2012. Retubing as early as possible would reduce the risk of condenser leaks.

Also, if Figures 3 and 4 in Bettis Condenser Long Term Plan are any indication, VY has not accounted for power uprate. The projections of wear rates are linear, even after the proposed extended power uprate happens.

Even as of October 2002, ENVY was still contemplating Kuesters recommendation from 1999. Specifically, the Record of the Nineteenth Eddy Current Inspection, signed by Zalewski, recommends epoxy coating the tube sheets and inlet tubes and increasing the inspection sample.

ENVY provided nothing during discovery that indicated that that any of these important recommendations, which they have known about for four years, have been acted upon.

Despite all these indications that the system was marginal even at VYs current power level, VY only plans to improve the system by staking the tubes as a result of the power upgrade. Specifically Project Definition Document VMY 2003-012 dated April 15, 2003 (Attachment to DPS-1-15-b) states The SWEC EPU Feasibility Study concludes that the main condenser tubes require staking to eliminate the susceptibility to vibration wear. In fact the evidence is clear that ENVY has known for four year that it has needed to stake the tubes in order to have the condenser last until 2012 under existing conditions.

Staking was required in 1999 and is still required because the tubes are thinning from both the waterside and the steam side from erosion. As tubes get much thinner than their original condition, because they are no longer rigid, they begin to flutter in the stream of condenser flow; much like a blade of grass held between fingers as you blow across it. Metal fatigue, cracking, and failure result. Staking was required to eliminate only this one part of the condensers problems in 1999 and ENVY is just recognizing it four years later.

Because the cooling towers are under sized for 120% power, the condenser backpressure will fluctuate, as it has not in the past. This will be especially true in summer months when no heat can be dumped to the Connecticut River and all Cooling Tower cells are operating. This fluctuating pressure will increase the high cycle fatigue on the condenser tube sheet, which is already damaged.

TECHNICAL EVALUATION NO. TE 2001-047, APPROVED BY E BETTI ON 6/22/01, REVEALS THAT THE ORIGINAL WESTINGHOUSE CONDENSER BRACING SYSTEM HAD DEFICIENCIES THAT (FOLLOWING 23 YEARS OF OPERATION) CONTRIBUTED TO A 6 FOOT CRACK IN THE A CONDENSER...ADDITIONAL LARGE CRACKS WERE FOUND AND REPAIRED IN THE FOLLOWING REFUEL OUTAGE IN THE SAME LOCATION IN THE B CONDENSER (1995).

THE REPORT GOES ON TO SAY, IT SHOULD BE NOTED THAT THE ORIGINAL CONDENSER WELDS WERE VERY POOR AND THESE WELDS FROM THE STANDPOINT OF ULTIMATE STRENGTH UNDER PRIMARY LOAD STANDPOINT CANSUPPORT GRAVITY AND PRESSURE LOADS FROM SERVICE CONDITIONSSECONDARY LOADS ARE IMPORTANT FROM THE STANDPOINT OF FATIGUE FAILURE. FORTUNATELY VY IS A BASE LOAD PLANT, AND THE PRESSURIZATION CYCLES FOR THE CONDENSER WILL NOT LIKELY EXCEED 200 CYCLES THROUGH THE END OF LICENSE. WHEN THIS REPORT WAS WRITTEN, THIS MAY HAVE BEEN TRUE, BUT THE 120% UPGRADE INTRODUCES FATIGUE CYCLES, WHICH THE AUTHOR HAD NOT ANTICIPATED.

Despite all these indications that the system is marginal even at VYs current power level, VY has chosen not to improve the system in any way. Specifically, in Jay Thayers Prefiled Rebuttal Testimony, dated July 2, 2003, page 2, Mr. Thayer states that plant modifications that are necessary to achieve the power upgrade have been firmly established for months. And in attachment EN-JKT-10 to the same testimony entitled Vermont Yankee Power Upgrade Project Description, a list of components Entergy is planning to replace or modify is provided. There are no listings for the condenser tube sheet. Based on this description, VY has no intention of making any improvements to the condenser tube sheet.

To: Shadis Raymond <shadis@ime.net>
From: Arnie Gundersen <arniegundersen@adelphia.net>
X-ASG-Orig-Subj: seismic/ missing records
Subject: seismic/ missing records
Date: Mon, 23 Aug 2004 21:20:08 -0400

Begin forwarded message:

Date: July 8, 2004 6:08:53 AM EDT
To: "Rick Ennis" <RXE@nrc.gov>
Cc: Paul Blanch <pdblanch@comcast.net>, Shadis Raymond <shadis@ime.net>, Anthony McMurtray <ACM2@nrc.gov>, Allen Howe <AGH1@nrc.gov>, Brian Holian <BEH@nrc.gov>, Cornelius Holden <CFH@nrc.gov>, Cliff Anderson <CJA@nrc.gov>, David Pelton <DLP1@nrc.gov>, Donna Skay <DMS6@nrc.gov>, Tad Marsh <LBM@nrc.gov>, Stuart Richards <SAR@nrc.gov>, William Ruland <WHR@nrc.gov>, Lochbaum David <dlochbaum@ucsusa.org>
From: Arnie Gundersen <arniegundersen@sailchamplain.net>
Subject: Noncompliance with NRC Regulation at VY

Please treat this as a formal allegation of a potentially safety significant problem at VY

I have recently received documents from VY in my role as an expert witness, which indicate that they have knowingly operated with a safety system in an unanalyzed condition for the last 18 years. Specifically the safety related seismic cooling tower had its fill replaced in the mid 1980's but that modification was never analyzed to determine if it effected the seismic qualification of the tower. This is and has been known to VY. I have an undated TPI document which I will be giving to Jay Thayerin the hearings today which states "THERE HAS NOT BEEN ANY ANALYSIS OF THE CLASS II STRUCTURE TO ACCOUNT FOR THE ADDITIONAL FILL THAT WAS ADDED IN THE MID 1980'S"

Furthermore In my review of VY records in support of NEC in the Uprate Hearings, I have discovered a disturbing trend in the area of RECORDS RETENTION for safety related items. The newly provided ENVY material confirms that previously identified trend.

A. The original seismic analysis of the safety related cooling tower was done by Fluor before the plant was built. An undated attachment to an email from Dan Yasi dated 12/6/02 states (Bates CT00205 and 206), "There is no documentation of the calculation of the loads used for the analysis or a comparison of the calculated loads to allowable loads."

B. MR 83-2055 modified the Cooling towers in 1983. An attachment to an email from Dan Yasi dated 12/6/02 states (Bates CT00206), "I am not able to locate any analysis associated with these modifications to determine what force would cause the ties to break."

C. MR 8-0635 and 0636 again modified the cooling towers in 1985. An attachment to an email from Dan Yasi dated 12/6/02 states (Bates CT 00206), "Again, I was not able to locate any analysis associated with these modifications."

NEC1SD# 32

In prior testimony, I noted documentation and record retention problems associated with the 1986 CB&I report on the 40 year design life of the plant.

Since testifying, of course there has been the missing fuel rod documentation problem (1979 +) as well as 20 undocumented cracks in the steam dryer, which VY has stated may have been there since the plant was built.

The common thread for all these documentation issues is that all of them occurred a long time ago. If the original design basis of the plant cannot be found, it is difficult to predict the future performance of said plant. In October 1996, the NRC sent VYNPC a letter requiring a response in accordance with 10 CFR 50.54(f) regarding the adequacy and availability of design basis information. One wonders how VY's licensee could have told NRC then that it had design basis information under control and tell the Board and intervenors now that some information is unavailable.

To: Shadis Raymond <shadis@ime.net>
From: Arnie Gundersen <arniegundersen@adelphia.net>
X-ASG-Orig-Subj: this is only a test!!!!
Subject: this is only a test!!!!
Date: Mon, 23 Aug 2004 21:20:52 -0400

Begin forwarded message:

Date: July 9, 2004 8:55:07 AM EDT
From: "Dave Lochbaum" <dlochbaum@ucsusa.org>
To: "Dave Lochbaum" <dlochbaum@ucsusa.org>
Cc: <JIZ@nrc.gov>, <NAS@nrc.gov>, <opa3@nrc.gov>, <RXE@nrc.gov>, <SRB3@nrc.gov>
Subject: The BWR Experimental Power Uprates

Beginning in 2001, the NRC allowed boiling water reactors to operate at up to 20 percent higher than their originally licensed power levels.

As indicated in the attached issue brief, the Experimental Power Uprates (EPU's) haven't been successful. Exelon reports damage caused by "lack of knowledge" and the NRC cites "questionable analyses."

The Experiment continues, courtesy of NRC.

Dave Lochbaum
Nuclear Safety Engineer
Union of Concerned Scientists
1707 H Street NW Suite 600
Washington, DC 20006-3962
(202) 223-6133 x113
(202) 223-6162 fax

[ATTACHMENT : See PDF - Attach Gundersen to Shadis 08-23-04]

To: Shadis Raymond <shadis@ime.net>
From: Arnie Gundersen <arniegundersen@adelphia.net>
X-ASG-Orig-Subj: Fwd: cooling towers
Subject: Fwd: cooling towers
Date: Mon, 23 Aug 2004 21:22:20 -0400
ATTACHMENT:

Arnie Gundersen
139 Killarney Drive, Burlington, VT 05401
Telephone: 802-865-9955 Fax: 802-865-9933
Email: arniegundersen@sailchamplain.net

My assessment of the stress load on the Vermont Yankee Cooling Towers is based upon the pertinent information I reviewed in New England Coalition's files and my expertise in cooling towers, including a master's thesis.

To begin, the end wall of the first picture (Picture XXX, YYY station) indicates the right side of the tower has a natural break about 1/3 of the way up -- where the tower structure rises vertically from the ground and then breaks at an angle to the upper right. This is referred to as the Ecodyne "wounded-knee" design because it introduces severe weakness in the tower structure.

Ecodyne built their earlier towers like this to squeeze a wider structure into a narrower concrete basin. Ecodyne retrofitted their towers with what was known as an "E-fix" for structural improvement after the initial design started to fail. At least two E-fix towers failed after receiving the E-fix, those at TXU's Permian Basin Plant and at Exxon-Mobil's Joliet Refinery. Vermont Yankee also has the E-fix cooling towers.

In the second picture, these towers (picture XXX, ZZZ Station) operated with only 137 horsepower (HP) and 28' diameter fans when they collapsed. As I stated in my testimony earlier last year [cite date & transcript #], increasing HP from 125 to 200 will increase the dynamic loads at Vermont Yankee, as well as static and velocity pressure loads, and will further over-stress an under-designed and aged frame.

If one looks carefully at the third picture (picture XXXXX QQQQ station) one will see the crane at the far end of the tower. This tower failed because one of the fan blades flew off the tower, causing a large asymmetric dynamic load to bring the tower down. To the best of my knowledge, fan failures have not caused structural collapses in towers manufactured by other corporations instead of Ecodyne.

Based upon my review of the discovery material, the history of Ecodyne "wounded knee" designs, and the failure of Ecodyne cells due to the imbalance of a single fan, it is my opinion that there may be unintended consequences to an asymmetrical loading of the entire structure when one fan has a different horsepower rating than the others in the same series of cells.

Therefore, I remain concerned that the reliability of the existing towers will be significantly compromised by the modifications that have been proposed for Vermont Yankee's cooling towers. In my opinion, the board should require structural certification by an Independent

Professional Engineer of Vermont Yankee's towers to assure that Ecodyne's "wounded knee" design will withstand the additional horsepower increase in the fans and the asymmetrical load cause by the one dissimilar fan.

It was Entergy who initially proposed the 200 Horsepower fans on all tower cells without exception. Since the cooling tower design was part of Entergy's original application, I fail to understand their inability to comply with the Board's order. In my opinion the alternative design asked for by Entergy is simply a cost-cutting measure, and may, in my opinion, reduce cooling tower integrity and therefore the overall reliability of the plant.

Date: Mon, 23 Aug 2004 21:41:00 -0400
To: Shadis Raymond <shadis@ime.net>
From: Arnie Gundersen <arniegundersen@adelphia.net>
X-ASG-Orig-Subj: msiv
Subject: msiv

Begin forwarded message:

From: "Paul Blanch" <pdblanch@comcast.net>
Date: April 14, 2004 9:56:24 PM EDT
To: <vob@nrc.gov>
Subject: NRC questions to Duane Arnold

Section 10.4, of your submittal, NEDC-32980P, stated that DAEC does not intend to perform tests involving automatic scram from high power, because Duane Arnold's operating history, the transient analysis performed at uprated condition and comparable uprate test performed at other stations such as Hatch, all demonstrate the unit can withstand these test. You pointed out that high power test will subject the unit to unnecessary plant transients. You added that as Duane Arnold experiences a Main Steam Isolation Valve closure of Generator Load reject at the uprates RTP, you will analyze the data available and confirm that the unit responded as expected. You concluded that you have verified that the data to assess the plants response to the transient.

The NRC-approved ELTR-1 requires the MSIVC test to be performed if the power uprate is more than 10% above previously recorded MSIV closure transient data. The topical report also requires the GLR test to be performed if the uprate is more than 15% of previously recorded transient data.

Please provide further clarifications, information and answers to the following questions 5) You cited uprated test performed at Hatch as an example of industry experience that indicate Duane Arnold could also withstand isolation transients form high power. For the Hatch Unit 1 and 2 uprate test, compare the units actual response with the applicable transient analyses. Discuss how this industry experience demonstrates that Duane Arnold power uprate, the cycle-specific limiting transient analysis would provide equivalent protection compared to startup test.

10.04

Date: Mon, 23 Aug 2004 21:41:36 -040 \\
To: Shadis Raymond <shadis@ime.net>
From: Arnie Gundersen <arniegundersen@adelphia.net>
Subject: Fwd: JUSTIFICATION FOR EXCEPTION TO LARGE TRANSIENT TESTING

Begin forwarded message:

From: "Paul Blanch" <pdblanch@comcast.net>
Date: April 14, 2004 9:36:01 PM EDT
To: <vob@nrc.gov>
Subject: JUSTIFICATION FOR EXCEPTION TO LARGE TRANSIENT TESTING

BVY 03-80 / Attachment 7 / Page 1

JUSTIFICATION FOR EXCEPTION TO LARGE TRANSIENT TESTING

Background

The basis for the Constant Pressure Power Uprate (CPPU) request was prepared following the guidelines contained in the NRC approved, General Electric (GE) Company Licensing Topical Report for Constant Pressure Power Uprate (CLTR) Safety Analysis: NEDC-33004P-A Rev. 4, July 2003. The NRC staff did not accept GE's proposal for the generic elimination of large transient testing (i.e., Main Steam Isolation Valve (MSIV) closure and turbine generator load rejection) presented in NEDC-33004P Rev. 3. Therefore, on a plant specific basis, Vermont Yankee Nuclear Power Station (VYNPS) is taking exception to the large transient tests; MSIV closure and turbine generator load rejection.

The CPPU methodology, maintaining a constant pressure, simplifies the analyses and plant changes required to achieve uprated conditions. Although no plants have implemented an Extended Power Uprate (EPU) using the CLTR, thirteen plants have implemented EPUs without increasing reactor pressure.

1. Hatch Units 1 and 2 (105% to 113% of Original Licensed Thermal Power (OLTP))
2. Monticello (106% OLTP)
3. Muehleberg (i.e., KKM) (105% to 116% OLTP)
4. Leibstadt (i.e., KKL) (105% to 117% OLTP)
5. Duane Arnold (105% to 120% OLTP)

6. Brunswick Units 1 and 2 (105% to 120% OLTP)
7. Quad Cities Units 1 and 2 (100% to 117% OLTP)
8. Dresden Units 2 and 3 (100% to 117% OLTP)
9. Clinton (100% to 120%)

Data collected from testing responses to unplanned transients for Hatch Units 1 and 2 and KKL plants has shown that plant response has consistently been within expected parameters.

Entergy believes that additional MSIV closure and generator load rejection tests are not necessary. If performed, these tests would not confirm any new or significant aspect of performance that is not routinely demonstrated by component level testing. This is further supported by industry experience which has demonstrated plant performance, as predicted, under EPU conditions. VYNPS has experienced generator load rejections from 100% current licensed thermal power (see VYNPS Licensee Event Reports (LER) 91-005, 91-009, and 91-014). No significant anomalies were seen in the plants response to these events. Further testing is not necessary to demonstrate safe operation of the plant at CPPU conditions. A Scram from high power level results in an unnecessary and undesirable transient cycle on the primary system. In addition, the risk posed by intentionally initiating a MSIV closure transient or a generator load rejection, although small, should not be incurred unnecessarily.

Date: Mon, 23 Aug 2004 21:42:03 -0400
To: Shadis Raymond <shadis@ime.net>
From: Arnie Gundersen <arniegundersen@adelphia.net>
Subject: Fwd: Letter from VY to NRC September 2003

Begin forwarded message:

From: "Paul Blanch" <pdblanch@comcast.net>
Date: April 14, 2004 9:29:16 PM EDT
To: <vob@nrc.gov>
Subject: Letter from VY to NRC September 2003

BVY 03-[0827] / Attachment 1 / Page 2 analyses and evaluations performed specifically for the VYNPS EPU. The PUSAR contains information which GE considers to be proprietary. GE requests that the proprietary information in this report be withheld from public disclosure in accordance with 10 CFR 9.17(a)(4), 2.790(a)(4), and 2.790(d)(1). An affidavit supporting this request is provided in Attachment 5. The NRC may duplicate this submittal, including the PUSAR, for the purpose of internal review. A non-proprietary version of NEDC-33090 is included as Attachment 6. As part of the power ascension test plan, VY is not planning to conduct certain large transient testing which requires an automatic scram from high power (e.g., main steam isolation valve (MSIV) closure). Attachment 7 provides justification for not performing this testing.

This request for license amendment, while not being submitted as a risk informed licensing action, as defined by Regulatory Guide 1.1744, was evaluated from a risk perspective. As demonstrated in Section 10.5 of the PUSAR, when the guidelines established in Regulatory Guide 1.174 are applied, the calculated results from the Level 1 and 2 Probabilistic Safety Analyses represent a very small risk increase in core damage frequency (CDF) and small risk increase in large early release frequency (LERF). The best estimate of the risk increase for at-power internal events due to the EPU is a delta CDF of 3.3 E-7/year (i.e., an increase of 4.2% over the base CDF of 7.77 E-6/year. The best estimate for at-power internal events results in a delta LERF of 1.1 E-7/year (i.e., an increase of 4.9% over the base LERF of

Date: Mon, 23 Aug 2004 21:42:24 -0400
To: Shadis Raymond <shadis@ime.net>
From: Arnie Gundersen <arniegundersen@adelphia.net>
Subject: VY doesn't want to test MSIVs even though GE has a strong recommendation

Begin forwarded message:

From: "Paul Blanch" <pdblanch@comcast.net>
Date: April 14, 2004 9:16:50 PM EDT
To: "'Veronica O. Bucci'" <VOB@nrc.gov>
Subject: VY doesn't want to test MSIVs even though GE has a strong recommendation

STP 19 Core Performance Evaluation

Yes

N/A-Test will be performed for CPPU

STP 21 Flux Response to Rods

No

This test is to demonstrate stability in the power-reactivity feedback loop with increasing reactor power and determine the effect of control rod movement on reactor stability. This initial plant startup test was performed at 17% and 52% CLTP power. Operation at CPPU increases the upper end of the power operating domain. These changes in the higher end do not significantly or directly affect the manner of operating or response of the reactor at these lower power levels. Therefore, this test is not required.

STP 22 Pressure Regulator

Yes

N/A-Test will be performed for CPPU.

STP 23 Feedwater System

Yes

Control system test performed for CPPU-(Notes 6,&7)

STP 24 Bypass Valves

Yes

N/A- Test will be performed for CPPU

STP 25 Main Steam Isolation Valves

No

See Justification for Exception to Large Transient Testing Requirements, MSIV Closure Testing.

STP 26 Relief Valves

No

This initial startup test is performed at 25% CLTP...

Date: Mon, 30 Aug 2004 06:23:44 -0400
To: Shadis Raymond <shadis@ime.net>
From: Arnie Gundersen <arniegundersen@sailchamplain.net>
Subject: condenser leakage



Begin forwarded message:

From: "Dave Lochbaum" <dlochbaum@ucsusa.org>
Date: August 23, 2004 5:32:44 PM EDT
To: <shadis@prexar.com>
Cc: <pdblanch@comcast.net>, <arniegundersen@sailchamplain.net>
Subject: Minor mod MM-2003-026, AST Component Mod

Hello Ray:



Thanks,
Dave

Date: Tue, 14 Sep 2004 12:28:02 -0400
To: Raymond Shadis <shadis@prexar.com>
Cc: Dave Lochbaum <dlochbaum@ucsusa.org>, Paul Blanch <pdblanch@comcast.net>
From: Arnie Gundersen <arniegundersen@adelphia.net>
Subject: Re: Fire LER

[REDACTED]

At 10:21 AM 9/13/04, you wrote:

**THE FIRE AT VY COULD HAVE BEEN PREVENTED, BUT VY IGNORED INDUSTRY
ADVICE FOR 14 YEARS!!!**

The following are direct quotes from the VY LER.

"The root causes of the event were determined to be inadequate preventative maintenance for cleaning and inspections during outages and failure to monitor age related degradation. Additional inspections to evaluate the condition of the bus (including its flexible connectors) would have detected the degraded flexible connectors or the presence of loose/foreign material with the potential to ground the bus.

The need for inspecting the flexible connectors was identified during a recent review of industry operating experience (OE). This OE is being included as recommended preventative maintenance for future outages; however, it was not included in the preventative maintenance inspection performed during RFO-24.

Industry experience has revealed that surge arrestors degrade over time due to a combination of age, service environment and service conditions. The "A" surge arrester failure was the result of the combination of a ground occurring on the 'B' iso-phase bus that caused an increase in voltage on the UA' iso-phase bus and not performing preventative maintenance necessary to monitor age related degradation of the "A" could have detected degradation and allowed replacement prior to failure.

A contributing cause to both of the conditions previously described was identified by the investigation team as a failure to effectively use industry OE to prevent similar events from occurring at VY. Specifically, it was noted that; the actions taken by VY in response to recommendations provided within the INPO Significant Operating Experience Report (SOER) 90-01 for "Ground Faults on AC Electrical Distribution" were inadequate. In addition to the SOER, guidance provided within EPRI's Isolated Phase Bus Maintenance Guide" TR-1 12784 (1999) for the 22 kV flexible connectors and periodic inspections/testing was not utilized."

.....
[REDACTED] The INPO report which VY references but ignored by is 14 Years old!!!!

Yet during the Uprate hearings, Mr. Sherman states, in my experience I have observed that when Vermont Yankee knows about an issue, it manages it in a manner that results in safe and reliable

operation (Sherman, page 19, line 1). How can VY ignore INPO for 14 years and still get rave reviews from the State's Nuclear Engineer?

And Mr. Thayer said (186 out of 332: June 16, 2003):

3 THE WITNESS: I guess if you have -- if
4 you look at the regulatory process, and you
5 dissect the regulatory process, and you look
6 at the amount of inspection that occurs on a
7 regular basis, and then you look at the amount
8 of independent inspection that occurs on a
9 regular basis, you look at the history of
10 Vermont Yankee's operation, you look at the
11 Vermont Yankee's regulatory history, you
12 really can be quite satisfied in looking at
13 that record, that there is an ongoing safety
14 assessment of considerable breadth and
15 considerable depth as far as the safe
16 operation of that plant.

Not the State of Vermont, not Entergy, not the NRC, but New England Coalition identified the problem at VY ahead of time.

NEC Uprate testimony: As recounted in my October 2003 testimony on Page 18, line 5-14

Q. (To Mr. Gundersen)- Based on your observations of nationwide experience, should this provide assurance to the board regarding performance of these components and systems under uprate?

A. No. Mr. Thayer claims that the NRC has approved his aging management program for important systems, structures, and components. Adequate aging management means that the condition of equipment is monitored and it is repaired or replaced before it fails. Indian Points broken steam generator tube (2000), Summers leaking hot leg pipe (2000), Oconees broken control rod drive mechanism nozzles (2001), Quad Cities broken jet pump (2002), and Davis-Besses broken reactor vessel head are but a sampling of growing evidence that aging management programs aren't working.

Date: Mon, 20 Sep 2004 22:01:17 -0400

To: Paul Blanch <pdblanch@comcast.net>, Peter Alexander
<Peter_Alexander@antiochne.edu>, Shadis Raymond <shadis@ime.net

Cc: Lochbaum David <dlochbaum@ucsusa.org>

From: Arnie Gundersen <arniegundersen@sailchamplain.net>

Subject: liar ,liar, pants on fire!



Date: Tue, 21 Sep 2004 20:31:34 -0400

To: "Paul" pmlanch@comcast.net

Cc: "Raymond Shadis" <shadis@prexar.com>, "Dave Lochbaum" <dlochbaum@ucsusa.org>

From: Arnie Gundersen arniegundersen@sailchamplain.net

Subject: It's a trap!

Ray,

[REDACTED]

Date: Mon, 27 Sep 2004 08:23:48 -0700 (PDT)
From: Arnie Gundersen <arniegundersen@sailchamplain.net>
Reply-To: arniegundersen@sailchamplain.net
Subject: Fwd: Re: Forced Outages
To: 'Raymond Shadis' <shadis@prexar.com>, 'Arnie Gundersen'
<arniegundersen@sailchamplain.net>, 'Shadis Raymond' <shadis@ime.net>, 'Blanch Paul'
<pdblanch@attbi.com>, 'Lochbaum David' <dlochbaum@ucsusa.org>



-- Arnie Gundersen <arniegundersen@sailchamplain.net> wrote:

> Date: Mon, 27 Sep 2004 06:21:46 -0700 (PDT)
> From: Arnie Gundersen <arniegundersen@sailchamplain.net>
> Subject: Re: Forced Outages
> To: Raymond Shadis <shadis@prexar.com>, arniegundersen@sailchamplain.net
>



Date: Sun, 3 Oct 2004 11:04:05 -0400
To: Shadis Raymond <shadis@ime.net>
From: Arnie Gundersen <arniegundersen@sailchamplain.net>
Subject: Fwd: idea

Begin forwarded message:

From: Arnie Gundersen <arniegundersen@sailchamplain.net>
Date: September 30, 2004 6:38:33 AM EDT
To: Shadis Raymond <shadis@ime.net>
Subject: idea



Date: Sun, 3 Oct 2004 11:08:31 -0400
To: Shadis Raymond <shadis@ime.net>, Blanch Paul <pdblanch@attbi.com>, Lochbaum David dlochbaum@ucsusa.org
Cc: Peter Alexander Peter_Alexander@antiochne.edu
From: Arnie Gundersen <arniegundersen@sailchamplain.net>
Subject: Forced Outages

Begin forwarded message:

Date: September 26, 2004 10:05:43 AM EDT
From: Arnie Gundersen <arniegundersen@sailchamplain.net>
To: Shadis Raymond <shadis@ime.net>, Blanch Paul <pdblanch@attbi.com>, Lochbaum David <dlochbaum@ucsusa.org>
Subject: Forced Outages

When VY blew its recirc pump seals last September, VY said the component had been scheduled to be replaced "... at the next outage.."

When VY had its fire, VY said an inspection of the component had been scheduled "... for the next outage...'

Two forced outages in one year on components which were previously identified as needing attention, but that attention was scheduled "... at the next outage..."

Date: Fri, 8 Oct 2004 06:56:32 -0400

To: Blanch Paul <pdblanch@attbi.com>, Lochbaum David <dlochbaum@ucsusa.org>, Peter Alexander <Peter_Alexander@antiochne.edu>, Shadis Raymond <shadis@ime.net>

From: Arnie Gundersen <arniegundersen@sailchamplain.net>

Subject: root cause found something



Date: Sun, 10 Oct 2004 17:45:42 -0400

To: Lochbaum David <dlochbaum@ucsusa.org> Cc: Peter Alexander
<Peter_Alexander@antiochne.edu>, Blanch Paul <pdblanch@attbi.com>, Shadis Raymond
shadis@ime.net

From: Arnie Gundersen <arniegundersen@adelphia.net>

Subject: Uprate problems

Dave,



Arnie

Date: Mon, 11 Oct 2004 06:39:40 -0400

To: Lochbaum David <dlochbaum@ucsusa.org>, Blanch Paul <pdblanch@attbi.com>, Shadis Raymond <shadis@ime.net>, Peter Alexander <Peter_Alexander@antiochne.edu>

From: Arnie Gundersen <arniegundersen@adelphia.net>

Subject: fire



Date: Thu, 14 Oct 2004 12:10:36 -0400
To: Arnie Gundersen <arniegundersen@adelphia.net>
From: Raymond Shadis <shadis@prexar.com>
Subject: Re: should I be there?

[REDACTED]

--Ray

Date: Sun, 17 Oct 2004 10:14:30 -0400
To: Arnie_Gundersen
From: Raymond Shadis <shadis@prexar.com>
Subject: Basis Info Needed

Arnie:

[REDACTED]

Got to Run,

Ray
