

RAS 14397

**From:** "Sally Shaw" <acer8sac@comcast.net>  
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**Date:** Thu, Oct 11, 2007 10:45 PM  
**Subject:** Comment on ENVY Relicense

attached are written comments on the license renewal proceeding for Entergy Vt. Yankee reactor. I submitted them in writing at the ASLB hearing at the Latchis Theatre in Brattleboro October 11, 2007. To make sure that they are included in the transcript and public record in their entirety they are attached here as well. Given only 4 minutes to speak, I did not have time to read my entire comment into the record. I submitted photos as evidence as well. Perhaps they could be scanned in. The attached includes minor corrections (spell check, grammar).

Thank you,  
Sally Shaw  
Gill, MA

"Our lives begin to end the day we become silent about things that really matter." ~MLK

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**Comments to the NRC's ASLB on Vermont Yankee Relicensing**  
**October 11, 2007** **Latchis Theatre, Brattleboro**

**Sally Shaw**  
**Gill, MA**

**a) NEC Contentions**

**b) sua sponte investigation of lax safety culture at ENVY called for**

**a)**

**NEC Contention 2: aging management of anticipated metal fatigue, pursuant to 10 CFR Section 54.21(a) and 10 CFR Section 54.21(c).**

Failure probabilities of vessel welds for BWR's analyzed in an EPRI and Structural Integrity Associates paper: "The effect of adjusted reference temperature on the probability of failure in BWR vessel welds" (Shu S. Tang, P. Riccardella, M. Herrera, D Covill, R. Carter, and L. Steinert) were calculated on the basis of a design life of 40 years (32 effective full power years) for the plants (not 60 or 80 years, not at 120% power). They found that the probability of failure (POF) increases as the adjusted reference temperature (ART) increases. I am concerned that Entergy employed shoddy assumptions in their aging management program for predicting and preventing embrittlement failures. I contend that Entergy inappropriately relied on calculations such as the above-referenced paper in their application for License Renewal to predict future performance, when such calculations are only germane to BWRs approaching the end of their design life, not exceeding it by 20-40 years, and are based on normal operating loads, not on uprated loads with their higher temperature, pressure, more enriched uranium fuel, and therefore higher neutron fluence levels, and for normal pressure/temperature conditions, not for containment overpressure, which the NRC in its infinite wisdom allowed Entergy to employ to enable it to uprate. The introduction to the paper says:

Boiling Water Reactor vessel welds in the beltline region are subjected to neutron radiation embrittlement. This neutron radiation embrittlement has significant effect on the integrity of the vessel welds in the pressure boundary due to the decrease of fracture toughness of the weld material. The decrease of fracture toughness in the weld material is a function of copper and nickel content, and the level of neutron fluence in the beltline region, (Regulatory Guide 1.99, 1988). It is likely that as the BWR

vessels are near the end of the design life, the increase in the ART would be significant that the fracture toughness of the material is much lower than the upper shelf energy.

Coupled with the observation from the operational data showing that stress corrosion cracking (SCC) of BWR vessels is more probable, study (Tang, 1996) was performed to evaluate the POF of the beltline vessels weld and the effect of inservice inspection on vessel reliabilities.

Pressure-temperature curve limitations can occur in aging reactors. P-T curves are modified to account for irradiation embrittlement effects based on the methods of Regulatory Guide 1.99 Rev. 2 (SI, Reactor Pressure Vessel Integrity Assessment, [www.structint.com/tekbrefs/sib96140/sib96140.html](http://www.structint.com/tekbrefs/sib96140/sib96140.html)). P-T curve violations typically occur during inadvertent transient events (as occurred 8/30/07). Were they encountered in the recent SCRAM and transient? Has the Reactor Vessel fracture toughness been re-evaluated since then? Does Entergy's aging management include an algorithm to periodically modify P-T curves, thereby narrowing the operating window as the reactor exceeds its design life of 40 years?

Please review Entergy's license renewal application to make sure they have not failed to demonstrate (pursuant to 10CFR 54.21 c(1)(i)-(iii)) an evaluation of time-limited aging analyses that will remain valid for the period of extended operation; analyses projected to the end of the period of Extended operations; or effects of aging on the intended functions will be adequately managed for the period of extended operation. I am concerned that Entergy is not using appropriate calculations to estimate reactor vessel integrity and weld integrity over the next 20-40 years. With atomic reactors, when equipment ages, it needs to be replaced BEFORE it fails. The recent cooling tower collapse is a case in point. Conservatism in monitoring and calculations must be maintained.

**NEC Contention 3: Entergy's LOR does not include an adequate plan to monitor and manage aging of the steam dryer during the period of extended operation.**

NEC contends that Entergy's proposed monitoring techniques are not based on actual measurement of crack initiation and growth but rely on theoretical calculations of computer models, the CFD model and the AC model. I was astounded to read in the Safety Evaluation for Uprate that these models had an uncertainty of over 100%. If I had submitted my master's thesis results with an uncertainty of 130% I would have failed and had to report no significant correlation. If NRC allows this to be Entergy's only resource for determining crack propagation, NRC is incredibly lame. We have had over a year of operation since uprate changes in plant equipment and power levels began (with bad vibrations, SCRAMS, fires, cooling tower failures) and in each of the last 3 refuelings, more large cracks were discovered in the steam dryer. How many cracks to break the camel's back? Does Entergy have a good computer model to tell us this? Should we in the sacrifice zone be asked to accept an accidental release or radiation (in addition to the routine releases) in the event of a steam dryer break-up jamming the steam pipe valves?

Should we be sanguine about the effects of radiation exposure which, some years out, nuclear scientist John Gofman would call random premeditated murder?

**NEC Contention 4: Entergy has no adequate plan to monitor and manage aging of plant piping due to Flow Accelerated Corrosion during extended operation.**

Roughness in aging pipes can accelerate corrosion, erosion, degradation of metal pipes. Increased steam flow increases FAC. As with the aging management of the reactor vessel and welds, it is not clear that the calculations Entergy plans to use (rather than actual inspection) are based on the changed parameters including increased steam flow and coolant flow rates under uprated conditions which will cause increased vibration and other flow effects. The Checworks software Entergy plans to use is not accurately benchmarked for use at VY. Changes in flow patterns due to FAC have not been examined or calculated. Workers have died in nuclear reactors: at Surry, VA and Mihanna, Japan due to burst steam pipes. It is not sufficient to allow failure to be the signal for repair, as with the transformer fire and the cooling tower collapse. A random sample inspection, or relying wholly on modeled calculations that are not a good fit with VY's changing parameters doesn't cut it, as Commissioner David O'Brien said at the recent VSNAP meeting in Vernon Oct. 4, 2007.

If the recent cooling tower failure is any indication, the assignment of piping into risk categories to decrease actual inspections at VY is an onerous development (NRC "Safety Evaluation by the Office of Nuclear Reactor Regulation of Proposal to use ASME Code Case N-560 as an Alternative to ASME Code, Section XI Table IWB-2500-1", VYNPS, Docket #50-271, Nov. 1998.). Apparently the NRC has accepted Entergy's bid to save money (over \$1.3 million) by reducing actual piping inspections by using the EPRI "risk informed" methodology using Class 1 (N-560 and full-scope (N-578) programs. ENVY is apparently the only operating reactor allowed this latitude. I submit that the culture of "what, me worry?" is not just a characteristic of ENVY's management, but of lax NRC oversight as well. Along with the other exemptions and license amendments allowed Entergy (no primary containment leak rate test in 2005 as planned, the next leak test postponed until 2015; a doubling of the MSIV leak rate which no doubt has an effect on steam flow hence flow accelerated corrosion in the main steam lines) this substitution of probabilities for real measurement, real knowledge of reactor condition is dangerous. In hindsight, after an accident, it will be criminal.

**b) Need for sua sponte investigation by the ASLB**

You have nice jobs, probably have nice homes, nice cars, nice families. Although the job market in Southern New England is not so lucrative as yours, we have nice lives here too. We just ask to be able to keep them. We are willing to risk the economic consequences of shutting VT Yankee, as scheduled, in 2012 or sooner if it continues to break apart without assistance. We ask that you do your jobs and investigate the apparently lax monitoring and inspection regimes at Entergy, whether they are the result of a thousand tiny exemptions and license amendments and rule changes, or of a new fad such as PRI, or due to human error or corporate squeezing of the bottom line. Here is one example of a

laissez faire attitude that must be investigated: A recent AP news article quoted a VT Yankee spokesman as saying that out of maybe 20,000 carbon steel bolts fastening splices in the cooling tower columns, only a small fraction of these (200?) had been replaced with stainless steel or even inspected. Yet the reactor was allowed to come back on line, and no drastically increased rate of inspection of the suspect members has been promised, according to John Dreyfus and David McElwee at the Oct 4, 2007 VSNAP meeting, despite the fact that McElwee acknowledged that the inspection program was inadequate and "an inspection where you could get your hands on the actual members would be much better." This is exactly the type of inspection of the entire reactor citizens of the sacrifice communities have been calling for for years. To regain any credibility, the NRC must allow an independent safety assessment of the scope and depth of Maine Yankee's at ENVY. We need to see a serious investigation of the failures of aging management of the cooling system. We need to see the failure to grease a bearing, resulting in an unanticipated SCRAM and transient, followed up to find out where the operational and maintenance process failed. We need to see the repeated exceedences of fenceline radiation standards that threaten the health of school children and local residents in Vernon and beyond stopped. We need you to halt the relicensing of VT Yankee pending the disposition of a docketed petition for rulemaking (PRM 50-11) on the obsolete radiation standards that are the foundation of the GEIS on which ENVY's environmental evaluation was based. This action was requested in a comment on PRM 50-11 submitted by Raymond Shadis of New England Coalition, an accepted intervenor in the ENVY license renewal process. I urge ASLB to hold the NRC to its rule (2.802 section c I believe) which allows parties to request suspension of license proceedings pending rulemaking disposition.

I attach as evidence of the need for sua sponte investigation by ASLB photos of the 1) June 18, 2004 Transformer Fire, 2) August 30, 2007 Cooling tower collapse, and 3) 24-hour Plume path of an hypothetical accident at VY from NOAA hysplit software, showing the radioactive contamination of all of Vermont within 24 hours.

Thank you for your thoughtful consideration.

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