From: "Sally Shaw" <acer8sac@comcast.net>
To: <VermontYankeeEIS@nrc.gov>
Date: Wed, Mar 7, 2007 5:20 PM
Subject: Comments on SEIS for ENVY reactor

Please see attached formal comments on the draft SEIS for Vermont Yankee. 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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ENVY Draft SEIS comment
Sally Shaw, Gill, MA

I respectfully submit that your GEIS, and the assumptions behind your SEIS are based on erroneous and incomplete information, and therefore your environmental review is neither thorough nor conservative. It has not been properly done. Since there is a petition for rulemaking questioning the scientific basis of the radiation standards and calculations in the GEIS, which is still in the comment period until Feb. 5, your environmental review cannot be considered complete until those issues are resolved, and a decision is made whether the GEIS accurately reflects risks or needs to be revised. Therefore, I hereby petition you (ok, it's a 2.802 petition) to halt the license renewal process of Vermont Yankee while the petition for rulemaking on the adequacy of radiation standards and risk factors in the GEIS is pending, and until a full review and reconciliation of your radiation standards, consistent with BEIR VII and other current scientific studies of the health effects of low level ionizing radiation, external AND INTERNAL, is undertaken. Then you can apply those more realistic standards to your estimates of the early fatalities, latent mortality, and radiation-caused injuries that would be expected from continued operation of Entergy Vermont Yankee, under normal operating and accident conditions. These data are of intimate concern to those of us living in Windham, Cheshire, and Franklin counties, the VY sacrifice zone. I would also like to present to you for your consideration this new and significant information:

1. From 1999 to 2002, the Windham County cancer death rate was 12.7% above other Vermont Counties, based on 451 deaths during the four year period. However, the death rate for all other causes was only 1.7% greater (Source: National Center for Health Statistics, http://wonder.cdc.gov). Some factor is causing Windham County residents to die in excessive numbers from cancer, and not from other causes. Reasons for the high death rates need to be understood.

2. Since 1979 the Windham county death rate exceeded the rest of the state by 19% for infants, 38% for children and adolescents, and 30% for young adults. High death rates for these 243 persons include cancer, birth defects, and other causes. (Source: same as above) Why should Windham County have high death rates? There's no obvious reason. The county is nearly identical to the state in percent of minorities and foreign born residents, and educational, poverty and income levels. Reasons accounting for the high death rates, need to be understood.
Emissions from Vermont Yankee must be considered as one factor. For years, scientists have agreed that radiation is much more toxic to the very young. Our local children and young adults have lived all their lives with Vermont Yankee releasing radioactivity, and have never breathed air or drank water without this radioactivity.

3. Preliminary results show that radioactive Strontium-90 in baby teeth in Windham County is 62% greater than levels elsewhere in the state. Results for only 26 teeth reported thus far, but the pattern is consistent with those near other U.S. reactors. (Source: RPHP) .

II. Your refusal to consider the environmental effects of an act of terrorism upon the spent fuel pool is not only tantamount to criminal negligence, it is silly. You know it is only a matter of time before the Supreme Court or U.S. Congress catches up with you. Saying it is up to the military to protect nuclear facilities is irresponsible when there are technologies readily available to the reactor and spent fuel owners today that could make these pre-deployed nuclear weapons MUCH safer. Hardened on-site storage for one. Can't the nuclear industry, (in fact, just 5 companies--no free market here) use a little bit of the $12 billion dollar corporate welfare they were given in the Energy Act of 2005 to show us that they are responsible corporate citizens by halting the overfilling of vulnerable fuel pools and putting the spent fuel rods in hardened storage casks and mounds? Can't the NRC show some backbone and require them to do it?

III. Your SEIS fails to grasp that Entergy's use of open cooling or once through cooling is a violation of the Clean Water Act. The 2nd U.S. Circuit Court of Appeals in Manattan recently ruled that it was improper for the EPA to let power plants circumvent environmental laws. This decision was a rejection of the EPA's refusal to adopt closed-cycle cooling as the best technology available. About half of the nation's power plants use the closed-cycle method, which operates like a car radiator, reusing the same water and only requiring small amounts of new water to replace what is lost to evaporation. The system uses at least 95 percent less water than once-through systems, which draw from waterways and expel warmed water back into those waterways." source:
http://www.thejournalnews.com/apps/pbcs.dll/article?AID=/20070127/NEWS01/701270339/1025/NEWS09

IV. You claim ENVY releases nearly no liquid effluents. In Sec. 2.2.31 of the SEIS you reveal that ENVY has 11 outflow pipes (and is requesting a permit for a 12th one) that release directly into the CT River, one for cooling water, and the others apparently from storm drains. But then your table shows that with the exception of the outfall pipe that releases cooling water, there are no radiation limits, and no monitoring required for effluents from most of the outfalls--all but two are unmonitored (SEIS section 2.2.31). Just preceding the Uprate application, Entergy was granted permission to stockpile 150 cu. meters of radioactive soil per year outside on site (that's eight LARGE dumptruck loads per year) in uncovered, unlined piles. There is no mention of this large quantity of radioactive soil in the SEIS, nor an explanation of where it comes from. The soil is apparently in the open, exposed to rain, snow, overland flow, erosion. Storm drains tend to pick up overland flow--but no monitoring is done so how do you know that the outfall effluent from the storm drains is within regulatory limits? I submit as new and significant information the Site Characterization Data Report for the Vernon/Vermont Yankee Site Volume 1, November 1991 prepared for the Vermont Low-Level Radioactive Waste Authority by Battelle.[1] The study concluded that due to a number concerns the site should be removed from consideration for siting a low level rad waste facility. Concerns included jurisdictional wetlands (VYW1, VYW2, VYW3 and VYW4) which meet federal criteria under Section 404 of the Clean Water Act (in addition, the palustrine wetlands are likely to be within the 100-year flood limit of the Connecticut River, under the new FEMA floodplain delineation);

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[1] Battelle. 1991. Site Characterization Data Report for the Vernon/Vermont Yankee Site Volume 1, prepared for the Vermont Low-Level Radioactive Waste Authority.

depth to water table (water level data from spring 1990 indicated groundwater within 4 inches of land surface at one location (103S in Battelle, table 3.1-1); travel times to river, to shallow domestic wells south of the site, and to surface seeps south of the site (preliminary minimum travel time (along most conservative pathway to riverbank estimate: 3 months to 9 yrs; to domestic wells uncertain. This travel time for leachate is not enough for Cobalt 60 and other long half-life radioisotopes WHICH WERE FOUND IN SEDIMENTS IN THE 1989 VYNPS RADIOLOGICAL SURVEY, ALONG WITH "DETECTABLE LEVELS OF HUMAN-MADE RADIONUCLIDES IN MILK, MIXED VEGETATION, AND FISH." (p. 2.9-1, Battelle). The study's conclusion was to recommend that the Authority suspend further characterization at this site and consider other alternatives. Why then is ENVY allowed to turn the site into a de facto low level radioactive waste dump with its open air radioactive soil stockpiles and septic sludge (see below)? Yet NRC concludes that low-level waste storage will have small impacts. At 150 cu. meter/year times up to 40 additional years, 6000 cubic meters of radioactive soil will have accumulated on a site deemed unsuitable for low level radioactive waste. How can this be of small significance?

Septic sludge too hot to send to commercial septic haulers is also surface-spread on site. Exactly which isotopes does this septic waste contain? Any runoff from the fields where septic sludge is spread in spring or during a heavy rainstorm (that which does not percolate down and reach the riverbank in just a matter of months) would be collected by the storm drains and flow out the outfall pipes in a matter of hours. If the outfall pipes are not regulated or monitored, how can NRC claim in this SEIS that there are no radioactive liquid effluents? Larry Crist or Carla White at VT DOH admitted that Cobalt 60 has been found in CT River sediments (pers. comm; confirmed by Battelle 1991). How do you know, if you don't monitor, whether this and/or any other radioactive environmental contaminants come from ENVY? Where are the shallow groundwater wells on the ENVY site and what is found in them? Are they of the appropriate depth to measure percolation of surface contaminants with precipitation? Wells tapping a deep aquifer, such as those supplying drinking water, are not suitable monitoring wells in that they are not in contact with the surface water or subsurface ground water which drains the site and carries any contaminants to the nearest seep, open stream or river. Where is the monitoring of groundwater wells reported?

In Section 2.2.2.2, p. 2-26, NRC claims that groundwater is 30 feet below surface at the south end of the site. This is deceptive and incomplete information, since that is certainly not true of the entire site, and is directly contradicted by the Battelle (1991) study cited above. The SEIS seems to repeat a pattern of bait and switch--substituting less damning information for information that would be more relevant ecologically.

Another example of misading information is your conclusion regarding "Heat Shock" of native fish populations, when COLD SHOCK is the more relevant concern for juvenile shad prevented from downstream passage by the heat plume which covers the downstream passage entrance, and which may stay in the Vernon pool later in the season because their normal thermal signals are disrupted by ENVY's waste heat. Then when they do head south to the ocean, they will be met with unaccustomed colder water due to the late migration. This is when many will die from cold shock. It appears the NRC did not evaluate any data that might elucidate this potential problem, it was merely mentioned and dismissed. The impact on federally endangered shortnosed sturgeon in the areas below the Turners Falls Dam where they are known to habituate, where a thermal influence from ENVY may

still be detectable (no data to the contrary was presented in the SEIS), was likewise not evaluated by USFWS or NRC, it was simply dismissed with a pro forma letter. This is not an environmental impact assessment, it is an exercise in guesswork and passing the buck. What is the effect of the thermal plume on benthic biota? No mention in the SEIS.

Another error on p. 2-85., regarding consultation with appropriate federal and state agencies, required under NEPA: You neglected to consult with the US Geological Survey, which provides ongoing scientific study of the river's chemistry, physical parameters and biota and cooperates in research at the Conte Anadromous fish Research Station in Tuirners Falls, MA. This is a serious oversight, as Shad and Short-nosed Sturgeon research are ongoing by USGS scientists and years of data on temperature ranges and their normal range of variation are available there. Please remedy this oversight in the final SEIS.

V. Section 2.27, Radiological Impacts:

On page 2-14, line 14-15 of the SEIS states "except for the impact of EPU, no increases in radioactive gaseous releases are expected during the license renewal period." This is a HUGE caveat, since the impact of the 20%(e) uprate may be an increase of 40% in radiation leaving the site (US NRC Advisory Committee on Reactor Safeguards, Meeting Transcript, 12/11/2006). It is an outrageous abdication of regulatory responsibility to condition a license renewal on the reactor's original license, and not AS IT IS CURRENTLY BEING OPERATED. Does the NRC include the impact of the doubling of the MSL leak rate, a pre-Uprate license amendment? Does it include the impacts of any number of behind the scenes license amendments to the designed-for operation of the reactor and turbines? **I hereby petition the NRC with a 2.802 Petition for Rulemaking, requesting that the policy on license renewals be revised such that all reactors applying for license renewal be evaluated based on current configuration and projected future performance and operating parameters, where those differ from their design bases and historical operation.**

Especially where radiological releases may be doubled by Uprate, a conscientious Environmental Impact Statement must consider the impacts of 20 to 40 more years of those increased radioactive pollution levels, as well as 20-40 more years accumulation of high-level nuclear waste. Refusing to look at this is probably a violation of NEPA.

NRC incorrectly assumes current NRC regulations are being met by the licensee and that the regulations themselves reflect current scientific realities and are protective of public health and safety. For example, the SEIS claims that the REMP (radiological environmental monitoring report) for the last 5 years were reviewed, and the radiation and radioactivity in the environmental media monitored around the reactor have been well within regulatory limits. Then an Entergy report is cited. Entergy is not an independent or impartial source of information. How do you know their reports are credible? Not only is this called into question by the lack of verifiable data, (Entergy has to resort to indirect calculations to claim that it stays within fenceline radiation limits, despite multiple averaged readings on distributed TLDs at the fenceline. By calculating only MSL gamma from inside the reactor building, they are ignoring other radiation sources (fission products, gases, hot particles, etc.) generated by the reactor, escaping the building, that may be deposited on site. Might these escaped radionuclides be the source of the 150 cubic meters/year of contaminated soil that is swept up ENVY's sidewalks and roads and deposited on site rather than being sent to

a licensed low level radiation dump as it should be? Entergy has failed to meet Vermont's fenceline standards a number of times prior to uprate, and are anticipated, despite promises to the contrary, to be in excess (as measured by the state's fenceline TLD's) for much of the period dating from the Uprate. This is unacceptable. Can NRC permit a plant that is in violation of state pollution laws? How can NRC accept the substitution of equations over actual instrument readings--equations which ignore radionuclides which do not emanate from the steam lines or turbine but nonetheless escape into the environment and contaminate the site (hence the 150 cu. meters of contaminated soil PER YEAR) and may be transported offsite by water or wind?

NRC's regulatory limits themselves are called into question by the National Academy of Science's BEIR VII report and a number of other recent scientific studies[2]. They are called into question because they are based on "standard man" and not the more vulnerable baby, child, woman, or fetus. They are called into question because the risk factors for radioactive carcinogens, many of them toxic as well as radioactive, are far more lenient than for all other chemical carcinogens. Perhaps your review of radiation standards will finally improve this deplorable standard. Until you do, the SEIS must be considered incomplete and lacking crucial health and risk data.

In estimating health impacts, the NRC appears not to have undertaken any locally focused epidemiological studies, disease registries or other health statistical resources. If your staff had, they would have found the unusual patterns of cancer deaths and mortality of young adults in Windham County Vermont I addressed in the second paragraph on page one of my comments, above. Have studies of disease incidence of Vernon Elementary School children 1972 - present been done? If not available from reputable sources, it is incumbent upon NRC to make sure the studies are done before expounding on the health risks or lack thereof. Given historically high gamma radiation levels inside the Vernon Elementary School, coincident in direction and time with high readings on ENVY's fenceline TLD's in 2004 (most recently documented in Vermont Public Service Board hearings in the dry cask case), and since these readings are clearly NOT due to Radon (daughters) as originally

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[2] Makhijani, Arjun. August 2005. Bad to the Bone: Analysis of the Federal Maximum Contaminant Levels for Plutonium-239 and Other Alpha-EmittingTransuranicRadionuclides in Drinking Water. Institute for Energy and Environmental Research,.

Russ, Abel; Casey Burns, Seth Tuler, and Octavia Taylor. March 2006.
Health Risksof Ionizing Radiation:An Overview of Epidemiological Studies Community-Based Hazard Management, The George Perkins Marsh Institute, Clark University, Worcester, MA 01610.

Makhijani, Arjun, Brice Smith and Michael C. Thorne. Feb., 2007. "Healthy from the Start: Building a better Basis for Environmental Health Standards – Starting with Radiation," in Science for Democratic Action Volume 14, Number 4. *(I hereby adopt and incorporate by reference as a supplement to my comments the aforementioned issue in its entirety.)*

surmised (William Irwin, Vermont Department of Health, Radiological Division Chief, pers. comm.), it is clear more investigation is urgently needed. If no one has submitted these anomalous interior radiation readings in an elementary school just 300 yards from the reactor as new and significant information, I do so now.

It is imperative that NRc not only determine the source of these extremely high radiation levels, but honestly and impartially determine whether there are or have been unusual trends in disease incidence in children who live in Vernon and/or have attended the Vernon School over the past 30+ years.

NRC reports radioactive off-gas releases to the environment from ENVY's 300-foot tall stack. However, neither NRC nor the state of Vermont has any way to verify these releases, because neither maintains their own detection equipment to verify Entergy's reported measurements. Given the history of false or incomplete data provided to the NRC and the State of Vermont (of which there are many examples in inspection reports; also the preparations for constructing a new building in anticipation of the Uprate which violated State codes.) This is an unacceptable abdication of oversight.

VI. Section 5, Impacts of postulated accidents. The ENVY SEIS states that NRC staff has concluded that the environmental impacts of design-basis or severe accidents are of small significance, as they have concluded for all plants in the GEIS. However they do not define how many potential fatalities are included in the definition of "small significance". At an anticipated population dose of 15 REM (averaged over 50 miles), and no elucidation of how the dose would vary over distance, it is likely that people near the reactor at the time of a severe accident would receive a lethal dose of radiation. I submit that ENVY may be the only operating reactor with an elementary school within 300 yards of its turbine building. I submit that this poses an inordinate risk to the health and safety of the children of Vernon, citizens most vulnerable to the harmful effects of radiation exposure, in the event of a DBA or severe radiological accident. At 300 yards away, there is no likelihood that all the children and staff and parents at this school would escape exposure to radiological releases. Just one fatal exposure would be one too many. I request that the NRC revisit their generic conclusion in light of the unfortunate proximity to a school where young children are present 180+ days out of the year, and apply the precautionary principle, not just cold-blooded PRA. I request that Entergy be required to fund a new site and building for the Vernon Elementary school as far from the reactor as possible. This is a reasonable mitigation (SAMA) for the awful possibility of severe harm to the youngest citizens of Vernon in the event of a severe or design basis accident.

The ignored risk of a spent fuel pool fire due to malicious or accidental water loss also poses an unacceptable risk to the citizens of Vernon and children at the school, both at current spent fuel stocking levels and the unimaginable potential doubling of this quantity by the time of eventual decommissioning.

VII. Finally, only the deluded could conclude that the potential environmental impacts of nearly doubling radioactive emissions and high level nuclear waste on a site within the 100 year floodplain are small compared to the impacts of implementing efficiency coupled with the development of wind, solar, cogeneration or even one new biomass plant in Vermont or elsewhere in New England. I find this conclusion extraordinary. I hope you will revisit it.