From: "Gjessing, Catherine" <Catherine.Gjessing@state.vt.us>
To: <VermontYankeeEIS@nrc.gov>
Date: Mon, Mar 12, 2007 8:31 AM
Subject: Comments on Supplement 30 for VYNPS

Good morning,

Attached are the comments of the Vermont Agency of Natural Resources on the Supplement 30 GEIS regarding the relicensing of Vermont Yankee Nuclear Power Station.

Thank you.

12/21/06
71FR 76706

(23)

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MEMORANDUM

TO: NUCLEAR REGULATORY COMMISSION

FROM: CATHERINE GJESSING, DEPUTY GENERAL COUNSEL
VERMONT AGENCY OF NATURAL RESOURCES

DATE: MARCH 9, 2007

SUBJECT: COMMENTS ON THE DRAFT GEIS FOR VERMONT YANKEE NUCLEAR POWER STATION LICENSE RENEWAL

Introduction

On June 23, 2006, the Vermont Agency of Natural Resources (VANR) filed scoping comments with the Nuclear Regulatory Commission regarding the relicensing of the Entergy Vermont Yankee Nuclear Power Station (VYNPS). The scoping comments requested a site specific, rather than generic, analysis of several issues in the context of the license renewal process for Vermont Yankee Nuclear Power facility. The *Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 30, Regarding Vermont Yankee Nuclear Power Station* was received by VANR on December 27, 2006. The majority of issues and questions raised by VANR have not been addressed in Supplement 30. These issues include; bird collision, power line right-of-way management, design basis accidents, waste management, and water quality concerns, as well as, the plant design basis for external events such as, flood and earthquake. As such, the EIS does not entail a site specific evaluation of the potential impacts of extending the VYNPS license on several issues of importance to VANR and the citizens of Vermont. The EIS represents a lost opportunity to assess potential impacts, identify whether any of these issues could have real impacts, and if so, address them appropriately. It is not clear whether some of these issues will be resolved in the context of ongoing NRC oversight if the plant relicense request is approved.

On Site Spent Fuel Storage

VANR is aware that the Vermont Department of Public Service (VDPS) will be filing comments on this issue. VANR concurs with the VDPS position that the potential impacts of long term storage of spent fuel on site should be subject to rigourous site-specific EIS evaluation. The prospect of long term spent fuel storage on site constitutes new and

significant information which justifies a site specific EIS evaluation of the potential impacts in the relicensing process.

Low-Level Radioactive Waste

Section 6-7 of Supplement 30 states that the "Commission concludes that there is a reasonable assurance that sufficient low-level waste disposal capacity will be made available when needed ..."

The States through the Low-level Radioactive Waste Policy Act and its Amendments are responsible for providing disposal capacity. The basis for NRC conclusions is not explained. Under federal law, without the state's involvement, no reasonable assurance can be made that waste disposal capacity will be available. It is requested that NRC obtain detailed waste volume and activity projections from Entergy for the license renewal period so as to fairly assess the potential impacts of license extension, support the conclusions in Section 6-7 of Supplement 30, and assist Vermont in meeting its compact responsibilities.

In accordance with the compact system, the State of Vermont has a responsibility to provide disposal capacity for generators of low-level radioactive waste (LLW) in Vermont. Vermont is a member of the Texas Low-Level Radioactive Waste Compact. Under Vermont statute waste generation must be minimized and waste volumes tracked to ensure proper disposal. As such, any increases in waste generation are of concern to the State. Title 10 VSA Section 7066 (c) governs the disposal of LLW and states as follows:

> "No generator of low-level radioactive waste in the state existing on the date of enactment of this section may increase its generation of waste in a year by more than 20 percent of the total annual volume of waste from all generators estimated for disposal by the secretary of natural resources, under subdivision 7065(a)(3) of this title, unless that generator receives a favorable determination from the secretary of natural resources that disposal capacity will be available as provided by section 3.04(11) of the compact agreement."

In addition, Section 7065 (a) (3) directs the Secretary of the Agency of Natural Resources to "....establish the annual projected volume of low-level radioactive waste from each generator in Vermont to be disposed in the compact facility for the years 1995-2045, to determine compliance with section 3.04(11) of the compact agreement."

The proposed extended life (2012-2032) will shift decommissioning volumes to after 2032. Operational volumes will continue adjusted for the previously granted extended power uprate. During the license renewal period many of the plant components will be 40 years or older. In the context of re-licensing, it is expected that VYNPS will plan for replacement of components for engineering considerations and predict maintenance costs. When components are replaced there could be spikes in waste volumes for any particular year. Any increase in waste stream impacts on low-level waste disposal capacity has the potential to impact on human health and the environment. VANR would like access to this information to facilitate the determination that disposal capacity is available for LLW generation as per State statute.

Design Basis External Events and SAMAS

Licensee renewal applicants are to consider alternatives to mitigate severe accidents. The purpose of this consideration is to ensure that plant changes (i.e. hardware, procedures, and training) with the potential for improving severe accident safety performance are identified and evaluated. The EIS notes that the cost beneficial SAMAS identified by VYNPS need not be implemented as part of license renewal. NRC does not indicate whether or not VYNPS would be required to implement cost beneficial SAMAS outside of the scope of the license renewal process. Will VYNPS be required to implement these SAMAS and, if not why not?

New scientific knowledge and technology should be applied to the examination of external events, such as, earthquake and flood to determine whether these new standards can inform the evaluation of potential impacts, if any. If potential impacts are identified the NRC should determine whether there are appropriate mitigation strategies to address potential impacts. In addition, the age and current physical condition of the facility may be relevant to the analysis of the potential impacts of an external event, including design basis external events, such as, flood and earthquake.

Earthquake

Since 1972 when VYNPS was licensed, the science of earthquake prediction has advanced. Probabilistic earthquake analysis that looks at all possible events at once of a certain size in a region are analyzed to predict accelerations at a given locality i.e. Vermont Yankee. A reanalysis of the earthquake catalogue used to make predictions in the northeast has occurred since 1972. Strong motion instruments have been placed in the eastern United States to record response spectra for eastern events (Example - the 6.2 magnitude event of Nov 25, 1988 in Sagueney, Quebec). The following are listing of various earthquake risk analysis approaches that are relevant to predictions in southeastern Vermont.

1972	VYNPS is built using the response spectra from a 1952 Taft, California event.
1980s	USGS developed the first probabilistic seismic hazard maps.
1995	"A Report on the Seismic Vulnerability of the State of Vermont", John Ebel etal., Weston Observatory of Boston College – contains Horizontal Peak Ground Acceleration maps
1996	USGS Probabilistic National Seismic Hazard Maps – Guidance maps of record (minor updates through 2002)

The USGS interpolated probabilistic 2002 ground motions for a latitude-longitude in the town center of Vernon are as follows:

LOCATION	42 46 35 Lat. -72 31 08 Long.

The interpolated probabilistic ground motion values, in %g:

	10%PE in 50 yr	2%PE in 50 yr
PGA	3.60	11.12

(PGA) – Peak Ground Acceleration, (PE) – Probability of Exceedance, (SA) –

Since 1999, a Vermont seismic consideration in geotechnical design uses the BOCA National Building Code (1996) in structural designs. The seismic provisions in BOCA include Peak Ground Accelerations (PGA) comparable to that by the USGS for a 500-year return period earthquake event (10% probability of exceedance in 50 years). Though not adopted in Vermont yet, the International Building Code (IBC) is the governing code in 26 states, the District of Columbia and for the Department of Defense. The IBC recommends peak ground accelerations comparable to those by the USGS for a return period of 2500 years (2% probability of exceedance in 50 years).

A letter of November 22, 1966 from John A. Blume and Associates, Engineers (Blume) to the General Electric Company, Atomic Power Equipment Department, concerning Vermont Yankee raises a concern about ground accelerations at the Vermont Yankee site. It states: "[A] moderate shock located about 10-20 miles away is a possibility that should be considered. Based on this assumption we recommend that the earthquake spectrum corresponding to the N69W component of the 1952 Taft Earthquake, normalized to the 0.07 gravity, be used for design." (Blume had reviewed a Weston Geophysical Research report and stated - "Using the seismic history data, the report establishes that maximum ground acceleration at the proposed site to be 0.03 to 0.04 gravity".)

Regulatory Guide 1.60, December 1973, defines a regulatory position for determining the Operating Basis Earthquake (OBE) and the Safe Shutdown Earthquake (SSE). In the Blume letter, it is not clear how 0.07 gravity was used or should be "used for design" in the analysis of OBE and SSE. Calculations for establishing OBE and SSE are tied to site conditions and the Blume letter raises the question as to whether the starting place in calculations should be "0.03 to 0.04" gravity or "0.07 gravity".

The additional concerns represented in International Building Codes and the uncertainty as to whether "0.07 gravity" was used in calculations for OBE and SSE suggests that Entergy analyze for a severe accident scenario that could exceed OBE and SSE. Severe nuclear accidents are those that have the potential to be more severe than the Design Basis Accidents. Severe Accident Mitigation Alternatives (SAMA) should be considered depending on the results of the analysis.

Flood

VYNPS is located on the Connecticut River, on a post-glacial alluvial terrace consisting primarily of fine, non-cohesive alluvial sediments (silt and sand). The facility is approximately one-half mile upstream of the Vernon Dam, a hydroelectric facility. The left

(easterly) abutment of Vernon Dam is founded on a peninsula of land known as Vernon Neck which narrows to as little as 60 feet across from top of bank to top of bank. The banks on each side of the peninsula slope downward to the Connecticut River.

Since the 1970s, there have been advances in scientific data, understanding and prediction of flood events. In addition, the advent and pace of global climate change may call into question the accuracy of flood frequency and volume projections. The potential for off-the-scale events that occur beyond accepted hydrologic and meteorological modeling projections may be increasing.

The Design Basis for External Events (DB) represents the Probable Maximum Flood (PMF) to consist of a discharge of 480,100 cfs. The PMF discharge was not determined in accordance with current NRC standards or methodology and falls significantly below the discharge volume determined through the current NRC standard of analysis. In addition, it is unclear how the PMF was calculated. What assumptions were made to calculate the PMF for this plant? What NRC standards and/or methodologies were used to arrive at this PMF? Does the DB analysis for External Events consider the impacts of inundation related to changes in the river channel including sedimentation, debris deposition and catastrophic erosion potential? If not, why not? Referrals to the FSAR and other NRC documents have not provided answers to these questions.

The DB analysis for External Events consists of a hydrologic and hydraulics (H&H) analysis which considers that, other than the failure of the Vernon dam powerhouse, the river channel cross section and profile remains static throughout the event. In consideration of the magnitude and catastrophic upstream consequences of a PMF discharge, it appears that the existing analysis of resultant flood elevations are suspect. The tremendous influx of sediment and debris into the Vernon pool is apparently not considered in the H&H analysis and as such the results are questionable.

In the context of license renewal, this facility should be evaluated in accordance with current regulations and; current scientific knowledge, technology and/or standards related to the floods and Design Basis for External Events assessments. Finally, the license renewal should consider whether the age and physical condition of the plant is relevant to the potential impacts of an External Event. Severe Accident Mitigation Alternatives (SAMA) should be considered depending on the results of the analysis.

The Environmental Impacts of Operation

The VANR generally agrees with the NRC conclusions regarding the Environmental Impacts of Operation set forth in Section 4 of the Draft Supplement 30. For example, the NRC appropriately examined the potential impacts to threatened and endangered species in proximity to the project site. VANR believes that assessing the potential impacts associated with the cooling water operations over the life of the license is difficult, given the number of variables and the dynamic nature of the affected ecosystems. However, because the Clean Water Act (CWA) requires that the discharge and the cooling water operations and structures comply with stringent standards which assure the protection and propagation of a balanced indigenous community of shellfish, fish and wildlife; VANR concurs with the NRC conclusion

that the impacts of the thermal discharge and fish impingement and entrainment is likely to be small. This is true, in large part, because the process associated with the NPDES permit is iterative in that it entails ongoing monitoring and review, and allows VANR to adjust the permit conditions regarding the cooling system operations and thermal regime. As noted by the NRC, VANR "may impose further restrictions or require modifications to the cooling system," as well as to the thermal regime to reduce or eliminate any impacts, in accordance with the CWA. The applicable state and federal standards under the CWA are protective of water quality and the environment, and the permit must be renewed every five years.

VANR did not review sections dealing with issues beyond the Agency's expertise, such as, the electromagnetic, human health, or the socioeconomic impact sections of Supplement 30.

Corrections

The following are corrections to the Draft Supplement 30.

- Page 2-40, lines 6-16. It is unknown whether the UST referenced in this paragraph is the source of the PCE (chlorinated solvent) contamination.
- VYNPS is currently operating under a NPDES permit dated September 28, 2004 (not the permit dated June 9, 2003 referenced in the Draft Supplement 30). As such, many references to the 2003 amendment are incorrect; among them:
  Table 2-1 p. 2-24, line 9 is incorrect. The 2004 permit allows 46,500 gpd not 14,000 gpd.
  p. 2-27; lines 27, 28
  p. 2-28; lines 17, 35, 38
  p. 4-14; lines 17 - 21
  p. 4-17; lines 35 - 36
- As correctly noted in Supplement 30 page 2-28, an amended permit was issued on March 30, 2006 approving an increase in the thermal discharge limitations. This amended permit was temporarily stayed by the Vermont Environmental Court for the year 2006. Motions to renew the stay indefinitely have been filed with the Court, an evidentiary hearing has tentatively been set for April 10 to 13, 2007 and the matter is pending a final decision by the Court.
- P. 2-28; line 32 mentions only NEC. The appeal was initiated by the Connecticut River Watershed Council, Trout Unlimited and the Citizens Awareness Network (referred to collectively here in as CRWC) on April 21, 2006.
- Chapter 2. Page 2-59. Red backed salamanders do not breed in vernal pools. Page 2-54. Also, it is worth noting that the sea lamprey has been extirpated from Vermont and from the Connecticut River.
- Section 2.2.3, page 2-39, line 17 – 18. The reported iron concentration of .425 mg/l may be inaccurate. Total zinc is reported to range up to .425 mg/l.
- Page 2-6, lines 1-5: Text generally describes land uses within a 5 mile radius of VYNPS. On the other hand, Figure 2-2 (pg. 2-3) illustrates a 6 mile radius.
- Page 2-45, lines 30-31: Flalladay Brook should be Halladay brook; Whetstone creek should be Whetstone Brook.

- Page 2-54, line 24: Shad are not likely to have been found spawning in a vernal pool as printed. This is should probably refer to the "Vernon" pool.