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By E-Mail: anthony.leshinskie@state.vt.us.

Mr. Anthony Leshinskie
Vermont State Nuclear Engineer
Vermont Public Service Department
112 State Street – Drawer 20
Montpelier, VT 05620-2601

Subject: Comments on the SAS and PSDAR

Dear Mr. Leshinskie,

Please accept for consideration by the Public Service Department(DPS) New England Coalition's Comments on the Entergy VY Site Assessment Study.

While New England Coalition ("NEC") greatly appreciates the DPS offer to consider including some portion of these comments within the DPS portion of the Post Shutdown Decommissioning Activities Report ("PSDAR") to be filed with the U.S. Nuclear Regulatory Commission, they are really more intended to provide NEC's perspectives to DPS and the Vermont Nuclear Decommissioning Citizens Advisory Panel.

Our understanding is that, upon receiving Entergy VY's PSDAR, NRC will post a Notice of Receipt of the Entergy VY PSDAR and a 60-day Opportunity to Comment in the Federal Register. NEC plans to comment on the PSDAR during the NRC comment period.

If there are any questions regarding NEC's Comments or if anyone at PSD wishes to consult further as the decommissioning scheme continues to emerge, please do not hesitate to contact me at 207-380-5994 (cell) or by e-mail shadis@prexar.com.

Thank you for your time and for your service to the State of Vermont. I and the New England Coalition look forward to working with you.

Raymond Shadis
New England Coalition

NEW ENGLAND COALITION'SCOMMENTS
ON THE
ENTERGY VERMONT YANKEE
SITE ASSESSMENT STUDY OF OCTOBER 2014

Before the Vermont Public Service Department

December 17, 2014

Comments prepared for New England Coalition
by Raymond Shadis
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December 17, 2014

New England Coalition's Comments on the Entergy Vermont Yankee
Site Assessment Study of October 2014

I. INTRODUCTION

A. Genesis of the Entergy Vermont Yankee Site Assessment Study ("ENVY Site Study").

Published in October 2014,this study is represented as fulfillment of provisions in the State/ENVY/ Entergy Nuclear Operations, Inc.("ENO"), Memorandum of Understanding and Settlement Agreement that were filed with the Vermont Public Service Board on December 23, 2013.

The pertinent provisions are as follows:

MOU - Paragraph 3

> As used in this MOU, the period of "site restoration" applies only to the period of time after radiological decommissioning has been completed to the satisfaction of the NRC. EVY expressly acknowledges the State's jurisdiction over site restoration. By December 31, 2014, Entergy VY shall complete and shall provide to PSD, ANR, and VDH a site assessment study of the costs and tasks of site restoration of the VY Station site. The site assessment study also shall include, without limitation, a full assessment of non- radiological conditions at the VY Station site. Following completion of this site assessment study, EVY, PSD, ANR, and VDH shall work in good faith to determine in a timely and cost-effective manner overall site restoration standards necessary to support use of the property without limitation (excepting any independent spent fuel storage installation ("ISFSI") and any perimeter related to it), including that EVY shall not employ rubblization at the VY Station site *(i.e.*, demolition of an above-grade decontaminated concrete structure into rubble that is buried on site) and addressing removal of structures and radiological exposure levels. Nothing in this MOU is intended to limit the authority of state agencies to require standards for site restoration commensurate with the standards most protective to the environment as employed at similar sites nationwide or required by law.

Settlement Agreement - Paragraph 6

> By December 31, 2014, Entergy VY shall complete and shall provide to PSD, ANR, and VDH a site assessment study of the costs and tasks of radiological decommissioning, SNF management, and site restoration of the VY Station. One scenario evaluated in that site assessment study shall be proceeding to prompt decontamination and dismantling (DECON), Rather than putting the VY Station into a storage and monitoring phase prior to decontamination and dismantling (SAFSTOR), as those terms are defined by the NRC. The site assessment study shall include, without limitation, an analysis of steps required to move all SNF to dry fuel storage and to close the spent fuel pool. The site assessment study also shall include, without limitation, a full assessment of non-radiological conditions at the VY Station site. In connection with the site assessment study, Entergy VY shall conduct a good faith search for, and provide to, ANR and VDH copies of all commercial general liability insurance policies in its possession, along with all pollution legal liability policies and all other insurance policies in its possession that may provide coverage for investigation and cleanup of releases of pollutants at or from the VY Station site from the date construction of the VY Station began, to the present. Once the site assessment study is completed, and before any submission to the NRC of the site assessment study, any site-specific estimate, or

> any Post-Shutdown Decommissioning Activities Report ("PSDAR"), Entergy VY shall review the results of the study with PSD, ANR, and VDH, and shall consider any comments provided by those parties for inclusion in the PSDAR that Entergy VY, as the NRC licensee, is responsible for submitting to the NRC, without limitation of the State's rights to otherwise comment or participate in the NRC process. Entergy VY shall file its PSDAR for the VY Station with the NRC no sooner than sixty (60) days after completing the site assessment study described in this paragraph. Any PSDAR Entergy VY submits for the VY Station will include this Agreement and reflect Entergy VY's commitments to the State in that report.

B. Implementation of the MOU and Settlement Site Assessment Study Conditions

These provisions muddle the timing, purpose, content, and authority for various standard licensee reports required by NRC with the State's pursuit of an effective role in the decommissioning of Entergy's Vermont Yankee Nuclear Power Station. As if to add insult to injury, the carefully nuanced vague and murky language of the Entergy VY Site Assessment Study ("SAS"), plus its omission of probative detail, frustrates needs of the State and the citizenry for transparency, openness, candor and clear information in its pursuit of sooner-rather-than-later quality decommissioning.

Entergy VY states that the SAS will provide a basis for dialogue with the State regarding the substantive issues before us. NEC offers the following Comments in hope that Entergy VY will clarify any misconceptions we may have and so lead to a more open and productive dialogue.

II. COMMENTS BY TOPIC

A. Entergy VY The ENVY Study (Executive Summary) comments, "At the time the agreement was negotiated, it was unclear exactly what the Site Assessment Study was, since no other nuclear utilities had prepared one."

However other utilities, as ENVY is well-aware, have prepared *historical* site assessments, which do provide information useful to roughly estimating decommissioning cost, and these studies which like the ENVY Study typically rely almost entirely on plant records[1] to gauge the volume, concentration and distribution of chemical and radiological pollution which are heavy cost drivers of decommissioning. Uncertainty as to the nature of a Site Assessment Study may have reigned in the minds of State negotiators as they went into the talks with no nuclear decommissioning expertise or experience on board, but based on the many

[1] In the Maine Yankee decommissioning, the company also placed reliance on the solicited recollections of employees-present and past, as to contamination events they experienced but which may not have been recorded. As part of a FERC settlement agreement with a local environmental group, Maine Yankee went so far as to place ads seeking information about contamination events in local newspapers and nuclear trade publications. This outreach yielded several responses which were folded into site survey and remediation activities.

"decommissioning experts" that Entergy brought before the Vermont Public Service Board in the several VY dockets, we can be reasonably sure Entergy knew, if not the details, then at least the character and general content of what it would produce. It is pretty clear that Entergy never intended a physical site survey and had from the get-go intended only a report of records content. How thorough the records search may have been or the quality of the records themselves, we do not know. That said, during Entergy's tenure record keeping and control of radiological materials has been marked by episodic failures, such as misplacing of broken nuclear fuel segments that triggered a three month search, and the interstate shipping of a radioactive fuel handling component with a package at three-times federal surface radiation limits. (***See also , Comment D, Section II, Re: Radiological Contamination in Safstor).*** Such failures warrant a skeptical approach to reliance on record keeping alone when ascertaining the status radiological and chemical site pollution.

B. The Decommissioning Operations Contractor ("DOC") Estimates in the SAS are of Dubious Value in Predicting Actual Costs.

Based on plant experience, accurate contamination cost numbers cannot be had absent physical surveys by radiological survey instruments and physical sampling. Site surveys, even preliminary surveys are much more detailed than one might imagine. A preliminary (scoping) site survey, termed an Initial Characterization Survey at Maine Yankee, featured approximately 130,000 site measurements with nearly 800 samples taken for laboratory analysis. Maine Yankee included decommissioning contract bidders as participants in the survey so that they could gain a firsthand understanding of the potential scope and cost of decommissioning activities before bidding fixed price decontamination and demolition.[2]

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[2]It was identified early on that a detailed site characterization would be essential for any decommissioning contract approach selected, as the results of site characterization support the development of detailed project plans …This characterization included hazardous materials as well as radioactive materials….An interesting aspect to this project was the participation by prospective DOC [decommissioning operations contractor] bidders. Maine Yankee had decided to proceed with preparing an RFP for a DOC under a fixed-price approach. The expectation from Maine Yankee was that the DOC selected would be responsible for required remediation of contaminated materials. It was imperative therefore that the prospective bidders accept the results of the initial site characterization as their bids would in-part be based on the amount of material to remediate. In the event that contaminated material was subsequently found that was unidentified in the initial site characterization, typical industry practice would be for the general contractor to state this was outside the initial project scope, hence would require additional cost to remediate. Maine Yankee wanted to avoid this possibility, so the prospective DOC bidders became participants in the characterization project. They reviewed the planned scope of work, suggested changes or additional areas to assess based on their

These radiological surveys are not typically done before the licensee certifies to NRC the cessation of operation and permanent defueling. This may reflect one reason that, at least up until a recent decommissioning "gold rush" of doubled and tripled estimates[3]; Safstor was the option of choice at multi-unit plants and not single unit plants. One would reasonably be leery of conducting sensitive site surveys or soil remediation of a shutdown reactor with an operating reactor at the same site when cross-contamination could occur.

Further Entergy VY is unclear as to the rationale and formula for "normalizing" the DOC estimates. We can only assume that estimates were not reduced or rounded down.

C. The Decommissioning Cost Estimates in the SAS Appear to Suffer from Tunnel Vision.

The decommissioning cost estimates of Entergy, TLG, and the Several DOCs, do not appear to take into consideration the cost savings that can be realized by incorporating lessons-learned, tools, and methods developed in preceding decommissioning efforts. NEC will not endorse or object to any particular cost-saving measure until its application is proposed in detail by the licensee, but a short list of those adopted at other plants would include, fixed price bidding, water-abrasive and chemical decontamination of reactor vessel, reactor internals and large bore piping, rip and ship (the shipment to monitored low-level sites of large sections of contaminated components-rather than onsite segmentation and decontamination), shipment rather than detailed survey of suspect concrete, in-depth single-pass contaminated concrete removal (rather than repeated shallow passes with surface grinders, controlled explosive demolition of large decontaminated or contamination free structures.

NRC requires that its licensee stay current with industry experience, thus, for example, a component failure at one plant can trigger an in-house inspection of a similar component in another distant plant. In similar fashion, Entergy and the State should consult industry decommissioning experience, past and present, to search out the most effective and protective

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experience. Each bidder provided one or two persons onsite at Maine Yankee for the duration of the characterization project at their own cost. At the conclusion, each prospective bidder was bound by the same characterization results. -**Maine Yankee Decommissioning Experience Report** Detailed Experiences 1997 – 2004, Prepared for EPRI [Edison Power Research Institute] and Maine Yankee by New Horizon Scientific, LLC 661 Oakhurst Court, Naperville, IL 60540, Principal Investigator R. Aker

[3] [3]We believe this spike in decommissioning cost estimates is concurrent with a widening realization throughout the nuclear industry that there was real money, although not nearly approaching operating revenues, to be made from supervising decommissioning.

means of moving into decommissioning and incorporating those means into decommissioning planning at VY.

Prompt decommissioning (underway) of the Zion reactors (Zion, Illinois) is an interesting example: Exelon, America's largest nuclear operating company, found that amid growing liabilities, the costs of keeping the twin Zion reactors in Safstor was apparently more than keeping pace with dwindling nuclear decommissioning trust reserves even though the dead generating units were helping provide their keep by serving as synchronous electrical condensers (grid stabilizers). Exelon went in search of a scheme to get the Zion Units into Decon.

Current estimates to decommission this two unit (two reactor) site come in at less than $800 million. Decommissioning is being performed by a company, and license-holder created for that purpose, Zion Solutions, which we understand, maintains its own low-level nuclear waste site.

Nowhere in the SAS does Entergy indicate that it has, in the year since the signing of the MOU and Settlement Agreement, explored any decommissioning optionsother than those in the SAS; Safstor and Decon. For example, NRC permits any reasonable mix of Safstor and Decon. In fact most, if not all plants, require a period of only minor decommissioning activity, except planning and surveys, while freshly discharged fuel decays (about 4 years) and casks are loaded (about 1.5 years) additional). A middle of the road approach found acceptable by the NRC was that taken by the Sacramento Municipal Utility District with its Rancho Seco reactor, where some decontamination and dismantlement activities began the decommissioning process and were followed by a period of dormancy to be followed again by decontamination and demolition.

D. About SAS Section 7.2 Benefits of Safstor.

One of Entergy's main selling points for SAFSTOR is an NRC-calculated reduction in worker radiation exposure. This need not be necessarily so, NRC does not take into account licensee actions directly aimed at limiting exposure. At Maine Yankee and Connecticut Yankee, for example, extensive use was made of a device called a Gamma camera. Tripod-mounted the camera could capture detailed images of radiation emanating from the walls of an entire room finding hotspots that workers could avoid and radiation experts could, with protection, remediate. Chemical and mechanical removal of contamination from various components can also chop exposures. At the Maine Yankee decommissioning, total radiation exposures were limited to one-half the NRC estimated exposures for a project of that size.

Ironically, fast-decaying penetrating radiation radionuclides, such as Colbalt-60, are useful in preventing radiation exposure when structures are being remediated or demolished. Because these penetrating radiation nuclides are usually found in company with less penetrating, but longer-lived nuclides such as Cesium-137, Strontium 90, and the heavy alpha-emitting materials, such as Plutonium 139, which can be hidden under a thin layer of concrete or soil, the high Gamma emitters can, if remediation is carried out early enough, signal the presence of dangerous hidden Beta and Alpha radiation emitters. Thus alerted workers can take extra precautions against contact, inhalation, or ingestion doses. Colbalt-60, the most energetic of these telltale radionuclides loses half of its energy in about five years.

It was of course advantageous for Entergy not to focus on the downside of prolonged storage of contaminated buildings, structures and components. For example, few people consider that stored buildings and components will go unheated for as many years as they are required to endure. In the first spate of cold weather, moisture condenses, potentially freezes, on the inner surfaces. Everything molds and corrodes. With or without overt structural failure, materials including contaminants migrate to the open environment.

NEC closes its admittedly limited comments with a photo from Entergy licensed Indian Point I, which is in Safstor. Shown is a valve in below grade piping. We believe the photo speaks volumes about Safstor