

**COMMENTS AND DECLARATIONS OF THE VERMONT DEPARTMENT OF
HEALTH ON ENERTEGY VERMONT YANKEE'S LICENSE AMENDMENT REQUEST
FOR THE EMERGENCY PLANNING ZONE IN LETTER
BVY 14-033 DATED JUNE 12, 2014 AND SECY-14-0125 DATED NOVEMBER 14, 2014.**

February 9, 2015

Introduction to Comments from the Vermont Department of Health

The Vermont Department of Health (VDH or Department), by and through Dr. William Irwin, Sc.D, CHP, Vermont Radiological and Toxicology Sciences Program Chief (curriculum vitae attached), focuses its comments and declarations on the NRC staff analysis and recommendations contained in a November 14, 2014 Policy Issue memorandum addressing certain exemption requests made by Energy Nuclear Operations, Inc. (ENO). See *Memorandum from Mark Satorius, NRC Executive Director of Operations to NRC Commissioners*, November 14, 2014 (Satorius Memorandum)(SECY-14-0125)(NRC Agencywide Document Access Management System [ADAMS] Accession No. ML14227A711). Specifically, the Satorius Memorandum seeks “Commission approval for the staff to grant [ENO’s] request for exemptions from certain emergency planning (EP) requirements of Part 50 . . . of Title 10 of the *Code of Federal Regulations*.” *Id.*, at 1. ENO’s request for the referenced exemptions was filed on March 14, 2014, prior to this License Amendment Request (LAR). See *Entergy Request for Exemptions from Portions of 10 CFR 50.47 and 10 CFR 50, Appendix E*, March 14, 2014 (BVY 14-009)(ADAMS Accession No. ML14080A141).

While the SECY-14-0125 Satorius Memorandum is not necessarily under review by the commission here, the memorandum’s contents are highly relevant to any Commission consideration of the instant LAR. The BVY 14-009 exemption request acts foundational requirement for the operation of this LAR. As a result, the Commission’s review of the LAR is

necessarily predicated upon consideration of SECY-14-0125, and comment on the memorandum is appropriate and within the scope of relevant commentary.

VDH strongly disagrees with the recommendation of the NRC staff in SECY-14-0125 to grant Entergy Nuclear Operations' (ENO) requested emergency plan (EP) exemptions from certain requirements of 10 CFR § 50.47 (b) and Appendix E to 10 CFR Part 50. The primary reasons for this are:

1. The exemption approval recommendation of the NRC staff is inappropriately based solely upon dose of radioactive contamination and does not include the health impacts of radioactive contamination from releases that result in doses below the Environmental Protection Agency (EPA) Protective Action Guidelines (PAGs);
2. The exemption approval recommendation of the NRC staff incorrectly assumes a comprehensive emergency management plan (CEMP) appropriate for response and recovery from radioactive contamination releases can exist and be maintained by offsite response organizations without licensee financial support; and
3. There has been no rulemaking and public comment appropriate to the proposed exemptions to the EP requirements of 10 CFR 50 .47 (b) and Appendix E to 10 CFR Part 50.

The Recommendation for Exemption Approval Is Based Only on Doses In Excess Of EPA PAGs Which Ignores Other Possible Public Health Consequences

Entergy and the NRC staff has determined that accidents at Entergy Vermont Yankee Power Station after April 2016 are unlikely to result in whole body doses in excess of one rem or thyroid doses in excess of five rem beyond the site boundary. The Department has not had the opportunity to assess the evidence to support that conclusion. Beyond that, those dosage levels are not the only thresholds for potential detriment to public health. Should a fire, a leaking container, or a transportation or industrial accident result in the release of radioactive materials that contaminate the environment around Vermont Yankee, numerous other consequences that are a detriment to public health will occur.

Radioactive contamination in solid, liquid or gaseous form that leaks from structures, systems or components or is released due to deliberate or accidental container damage or destruction may contaminate the water, land or air beyond the Vermont Yankee site boundary. While, according to the NRC staff and ENO, the contamination may not lead to doses that exceed the EPA PAGs, there still could be adverse health consequences. Some members of the public may inhale or ingest radioactive materials and receive low doses. Nonetheless, these doses will solely be due to the release from Vermont Yankee, and even though they may be less than the EPA PAGs, they still pose a risk of later health effects in those exposed. While evacuation and medical counter measures like potassium iodide may not be ordered in such circumstances, many of those exposed will self-evacuate and expect medical care.

In the case of a release related to Vermont Yankee, the public will look to the Department to explain what occurred, how the exposure affects health and well-being and what should be done in response to the exposures. Environmental samples would be collected by Vermont's

radiological first responders and samples would be analyzed in the VDH radiochemical laboratory. The analytical results would then be published to provide facts to allow people to trust that the land and water are, or will be at some future time, free of contamination. These capabilities have been developed over 42 years of Vermont Yankee operation, and should be sustained until the large volumes of radioactive materials stored at Vermont Yankee are removed from Vermont and properly disposed of at licensed radioactive waste facilities.

The NRC staff is using the EPA PAGs improperly. They are designed to provide guidance, not regulation, as to when and how protective actions like evacuation, potassium iodide administration, relocation, reentry and return may be appropriate, not when emergency plans are to be written, replaced or exempted. Emergency Plan requirements for nuclear power reactors in SAFSTOR must address all sources of radioactive contamination of the environment and not just those that result in doses greater than the EPA PAGs. This includes planning for and funding of dedicated state radiological health resources to survey the environment outside the site boundary for contamination of any media, analysis of those media for contamination, even at low levels, and reporting of the results to the public.

The Vermont Department of Health also lacks confidence that Entergy has provided sufficient evidence that all accident scenarios have been considered for its permanently defueled emergency plan. In particular, the accident and dose assessment software used by Entergy, Unified RASCAL Interface 2.0.1.0 of October 2014 (URI) does not recognize the widely accepted possibilities of hostile action-based scenarios that could severely damage spent nuclear fuel in its spent fuel pool. Such scenarios are described by the NRC in NUREG-1738 and the National Academies of Science. *Safety And Security Of Commercial Spent Nuclear Fuel Storage (Public Report), Committee on the Safety and Security of Commercial Spent Nuclear Fuel*

Storage Board on Radioactive Waste Management Division on Earth and Life Studies National Research Council Of The National Academies (2006). Lacking consideration of these and other scenarios in this important Entergy Vermont Yankee emergency preparedness software is evidence that the PDEP does not adequately consider these scenarios as pointed out by the Vermont Public Service Department in its comments on the license amendment request.

Recent use of the software by the Vermont Department of Health's US Department of Energy-trained Assessment Scientists revealed that URI would be useless for spent fuel accidents caused by aircraft crashes, whether accidental or hostile action-based or by large explosions caused by missiles or by armed intruders. Other scenarios that could result in the loss of the sheet metal structure that is the only secondary containment for the spent fuel pool, such as those identified with the accident at Fukushima, also do not appear to have been provided for in URI and the PDEP. The Health Department recognizes it would require the use of other software to model the consequences of these scenarios. The Department is well-trained in this other software, and in the interpretation of its output for the public and decision-makers. The elements of a law enforcement, fire department and emergency medical services based Comprehensive Emergency Management Plan are not.

The Assumption That a Comprehensive Emergency Management Plan (CEMP) Adequate to Respond to Radiological Releases from a Decommissioning Nuclear Facility Can Exist and Be Maintained without Licensee Support is Erroneous

SECY-14-0125 states that "elements of the revised emergency plan would facilitate the ability of offsite authorities to take protective actions under a CEMP." *Satorius Memorandum* at 5. There are numerous industrial accident scenarios, especially involving the movement or transportation of radioactive materials, hostile action based scenarios, and natural disasters that

could lead to the release of radioactive materials being stored in the structures, systems and components used for SAFSTOR for what ENO projects in its PSDAR to be a period of fifty years. Assaying these kinds of offsite consequences requires much more than law enforcement, fire department and emergency medical service personnel. It requires personnel trained to survey people and the environment for radioactive contamination, personnel trained to interpret radioactive material contamination for dose consequences and decisions about decontamination and disposal as radioactive waste, and personnel to inform decision-makers and the public of the situation to put risks in perspective and to plan other response actions. These kinds of people make up the existing offsite response organizations that the ENO exemptions would eliminate.

SECY-14-0125 also notes that precedent for approval of the EP exemption request has been set at Kewaunee Power Station and the Zion facility. *Id.* at 2. This is not evidence, let alone adequate evidence, for the NRC staff to recommend approval of the EP exemptions requested by ENO in its March 14, 2014 letter. See *BVY 14-009*. Emergency Planning has always been, is now, and always will be a local matter, and what other states or localities may have approved—in processes that Vermont was not a party to—cannot be imposed on Vermont. There are significant differences between Vermont and other states where decommissioning has occurred that show the exemption should not be approved here. Most importantly, unlike all other states with nuclear reactors in SAFSTOR, Vermont does not have other operating nuclear facilities within its borders and therefore, absent continued support from Vermont Yankee, would lack the infrastructure required to respond to a radiological release, including those resulting in doses less than the EPA PAGs.

SECY-14-0125 describes how the Federal Emergency Management Agency (FEMA) concurs with the NRC staff position recommending approval of the ENO EP exemptions. Should

there no longer be EP requirements to financially or otherwise support Vermont Yankee offsite response organizations, there is no way these organizations can meet FEMA or any other authority's guidance. It is also likely that, absent the emergency planning requirements for which ENO seeks exemption, any of the FEMA resources described in SECY-14-0125 (the Federal Radiological Preparedness Coordinating Committee, FEMA Headquarters and FEMA Regional Staff) would actually support Vermont's EP efforts at a level required for the people and environment of Vermont.

Not only should the decommissioning EP require plans that include offsite response organizations including the Vermont Radiological Tracking Team, the Radiological Sampling Team, and the Vermont Department of Health and its radiochemistry laboratory, but ENO should be required to financially support them.

There Has Been No Rulemaking and Public Comment on Exemptions from EP Requirements for Decommissioning Facilities

In its summary, the SECY-14-0125 letter includes the statement that “there are no explicit regulatory provisions distinguishing EP requirements for a power reactor that has been shut down from those for an operating power reactor.” *Satorius Memorandum* at 1. The document notes that rulemaking for nuclear power plant decommissioning was planned, but put off with the “higher priority work after the terrorist attacks of September 11, 2001.” *Id.*, at 3. With a growing number of nuclear power reactors presently undergoing decommissioning and expected to begin decommissioning in the next twenty years, this lack of clear regulation and absence of rulemaking makes circumstances unpredictable for many states who have lacked the opportunity to have their concerns for emergency planning addressed properly.

The NRC staff inappropriately based its recommendation to approve emergency plan exemptions for Vermont Yankee on analyses applicable to an independent spent fuel storage installation (ISFSI) or monitored retrieval Site (MRS). This methodology is inappropriate because former nuclear power reactors in SAFSTOR contain very large radioactive materials storage areas, not discrete spent fuel canisters tested and licensed specifically for the storage of high level waste. The structures, systems and components of a nuclear power reactor in SAFSTOR present a multitude of pathways for releases of radioactive materials into the environment. While the consequences may not result in doses in excess of EPA PAGs, environmental and public health consequences are possible. The probability of such releases is clearly greater than zero as has been documented in the Vermont Yankee PSDAR, including the extensive leak of reactor coolant/condensate from the augmented off gas system discovered in 2009.

Had there been required rulemaking for decommissioned nuclear power reactors, many states, including Vermont likely would request that NRC staff require licensees, including ENO, to financially support offsite radiological emergency response. Funding levels would be commensurate with the appropriate level of offsite response, and not simply eliminate essentially all offsite radiologically appropriate emergency response. One level might be set for the period through the removal of all spent fuel from the spent fuel pool (SFP), and another, reduced level might be set for the remaining time until decontamination, dismantling, and license termination. Absent rulemaking with public comment, the opportunity for states to weigh in is lost or significantly diminished.

It is unfortunate that the NRC staff has reinforced the misleading implication put forth by ENO in its Permanently Defueled Emergency Plan (PDEP) that elements of the EP “have been

established with the review and agreement of responsible State authorities.” BVY 14-033, Attachment 2, *Vermont Yankee Nuclear Power Station Permanently Defueled Emergency Plan*, Rev. 0, at 35, § 11.1. It is the understanding of the Department that the only review of the decommissioning EP with State authorities has occurred in briefings by ENO EP personnel in routine meetings of what is called the Tri-State Directors. A brief slide presentation before this audience is certainly not adequate State review and it should not be construed as State agreement.

Absent appropriate regulations for emergency planning during the decades-long phases of decommissioning, ENO should be allowed by the NRC staff to work extensively with the State of Vermont to identify mutually agreeable conditions for offsite radiological emergency response rather than have that possibility hampered by exemption of offsite responsibilities.

Conclusions of the Vermont Department of Health

According to SECY-14-0125, “FEMA acknowledges that individual states and local governments have the primary authority and responsibility to protect their citizens and respond to disasters and emergencies.” *Id.*, at 6. This certainly includes radiological emergencies, and it includes those that contaminate the environment with radioactive materials and lead to doses to members of the public both less than and greater than the EPA PAGs. These radiological emergencies require significantly more resources than what the NRC staff describes as a comprehensive emergency management plan using law enforcement, fire departments and emergency medical services. This includes the capability to survey for contamination, to properly collect samples with chain of custody, to efficiently analyze a wide variety of environmental media for radioactive material concentrations, to precisely interpret field

measurements and laboratory results, and to effectively report the situation to the public to allay concerns and to decision-makers so agencies can take appropriate public health and environmental protection response actions.

The recommendations of SECY-14-0125 undermine the ability to provide necessary emergency services for a plant in SAFSTOR by unilaterally exempting NRC licensees from most offsite emergency planning regulation based on inappropriate analysis applicable to ISFSIs and MRSs and a lack of consideration of hostile action-based scenarios. The Commission should reject the staff recommendations of SECY-14-0125.

Respectfully,

/s/ William Irwin
William Irwin, Sc.D., CHP
Radiological and Toxicology Sciences
Program Chief
Vermont Department of Health
108 Cherry Street
Burlington, VT 05401