



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION I  
2100 RENAISSANCE BOULEVARD, SUITE 100  
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

January 24, 2014

Richard A. Rothstein  
Plymouth Nuclear Matters Committee  
11 Lincoln Street  
Plymouth, MA 02360

**SUBJECT: PILGRIM NUCLEAR POWER STATION – DRY CASK STORAGE -  
EMERGENCY PREPAREDNESS**

Dear Mr. Rothstein:

I am writing on behalf of the U. S. Nuclear Regulatory Commission (NRC), in response to your December 19, 2013, e-mail to NRC Chairman Allison Macfarlane regarding her recent visit to Plymouth, Mass., and the Pilgrim nuclear power plant. Your e-mail raised concerns about Pilgrim emergency preparedness in the event of a radiological emergency, and the expedited transfer of spent fuel into casks. You also included your prepared remarks for an April 3, 2013, Board of Selectmen joint meeting with the Town of Plymouth Nuclear Matters Committee on emergency preparedness.

The NRC regulates and inspects the performance of nuclear power plant licensees, while the Federal Emergency Management Agency is responsible for assessing the performance of the offsite response organizations and their ability to protect the public in the event of a power plant accident. The commentary you provided identified a broad spectrum of EP related issues, and discussed many of the complexities involved in preparing for a response to a power plant event, including public reaction to the event and protective actions implemented on their behalf; evacuation conditions and feasibility; weather and dispersion models; and the type, timing, and duration of an event.

The issues and alternatives that you identified were considered by the NRC staff when the current EP regulatory structure was developed. For example, you discussed public participation in exercises. The EP community, both radiological emergency planning as well as the wider all-hazards planning, has placed its emphasis on ensuring that the emergency responders are capable of taking the necessary actions to protect the public, including effective communication on protective actions during an emergency.

Following the 1979 Three Mile Island accident, the NRC made significant amendments to its EP regulations. For example, the NRC and FEMA jointly issued NUREG-0654/FEMA-REP-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." Subsequently, several other EP-related guidance documents have been issued that address your concerns.

Consideration and assessment of the public's response to a nuclear power plant event and resultant protective actions is described in NUREG-0654/FEMA-REP-1, Rev. 1, Supp. 3, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants - Guidance for Protective Action Strategies," and NUREG/CR-6953, Vol. 2, "Review of NUREG-0654, Supplement 3, 'Criteria for Protective Action Recommendations for Severe Accidents' - Focus Groups and Telephone Survey." The analysis of protective actions and guidance to the industry on how to prepare a valid evacuation time estimate for developing protective action strategies is contained in NUREG/CR-6864, "Identification and Analysis of Factors Affecting Emergency Evacuations," and NUREG/CR-7002, "Criteria for Development of Evacuation Time Estimate Studies." NUREG/CR-6864 concludes that evacuation is an effective protective action; emergency responders will implement protective action orders and; the public will comply with protective action orders.

The planning basis for licensee EP programs for the consideration of the scope of various radiological releases is described in NUREG-0654, Section 1.D. Additionally, NUREG-0654, Appendix 2 provides the meteorological criteria needed for EP at operating nuclear power plants. The EP community, including government and private sector entities, has developed and refined the analytical tools needed to predict the behavior of radioactive releases which may occur as a result of a power plant accident. For example, the Pilgrim staff has the ability to provide real-time meteorological data from the site meteorological tower that can be factored into the dose plume analysis and protective action recommendations. The NRC's baseline inspection program includes an assessment of licensee performance in the areas of dose assessment, including the proper use of meteorological data and plume dispersion models, and of the development of accurate and timely protective action recommendations for the public.

The NRC staff has performed a comprehensive review of the EP regulatory structure, which included extensive public input, and identified a number of improvements. This review resulted in a new EP rule, which became effective on December 23, 2011, and addressed concerns that nuclear power plant licensees had not been exercising their Emergency Plans across a broad enough spectrum of simulated events. The new EP Rule is fully described in the Federal Register Notice (FRN) Volume 76, No. 226, Page 72560, and added new requirements for the type, timing, and duration of simulated events.

NSIR/DPR-ISG-01, "Interim Staff Guidance Emergency Planning for Nuclear Power Plants," which was issued in conjunction with the EP Rule, provides the latest NRC guidance on a number of the issues you identified. Concurrent with the NRC effort, FEMA undertook efforts to improve its guidance for offsite emergency preparedness through the October 11, 2011, issuance of a comprehensive Radiological Emergency Preparedness Program Manual. As a follow-up effort, the NRC and FEMA conducted numerous public meetings to solicit stakeholder input on these documents.

As to the subject of type and scope of plant events considered in EP, in SECY-03-0165, "Evaluation of Nuclear Power Plant Emergency Preparedness Planning Basis Adequacy in the Post-9/11 Threat Environment," issued on September 22, 2003 (not publicly available), the NRC staff reported to the Commission that the EP planning basis remained valid, including a varied number of accident initiating events and the pace of event progression. Another NRC initiative,

the State-of-the-Art Reactor Consequence Analysis (SOARCA) assessed important postulated severe reactor accidents for two pilot plants. NUREG/BR-0359, "Modeling Potential Reactor Accident Consequences," provides a plain-language summary of SOARCA. One key result was that the delayed releases calculated (compared to earlier studies) provide more time for emergency response actions such as evacuating or sheltering.

Regarding your concern about spent fuel storage at Pilgrim, we have consistently stated, and it has been reaffirmed in a number of studies, that both spent fuel pools and dry casks provide adequate protection of the public health and safety and the environment. Following the events at Fukushima, the NRC initiated additional studies of spent fuel pool safety including: SECY-13-0112 (ML13256A334), "Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor," and COMSECY-13-0030 (ML13329A918), "Staff Evaluation and Recommendation for Japan Lessons-Learned Tier 3 Issue on Expedited Transfer of Spent Fuel." The purpose of the studies was to inform the Agency's decision-making related to the timing of the transfer of spent fuel from the spent fuel pool to dry cask storage. The study results were consistent with earlier research conclusions that expediting the movement of spent fuel from the spent fuel pool would not provide a significant safety benefit. The Commission is currently deliberating the results of these studies, and the NRC staff is awaiting further guidance.

All of the above documents are available on the NRC's public web site. Specifically, the EP documents can be found at: <http://www.nrc.gov/about-nrc/emerg-preparedness/regs-guidance-comm.html>; the EP Rule FRN can be found at: <http://www.gpo.gov/fdsys/pkg/FR-2011-11-23/pdf/2011-29735.pdf>; and, the SOARCA report can be found at: <http://www.nrc.gov/about-nrc/regulatory/research/soar.html>. Documents with an "ML" (accession number) can be found in the NRC's Agencywide Documents Access and Management System (ADAMS) at <http://www.nrc.gov/reading-rm/adams.html>.

Thank you again for sharing your concerns and insights regarding emergency preparedness for the Pilgrim Nuclear Power Station. If you have any further additional questions or concerns, please contact the Region I State Liaison Officer, Doug Tift, at (610) 337-6918 or [Doug.Tift@nrc.gov](mailto:Doug.Tift@nrc.gov).

Sincerely,

/RA/

Raymond K. Lorson, Director  
Division of Reactor Safety, Region I

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/RA/

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