

To: Sam Phillips, MEMA Director

From: Pilgrim Watch/DNAC

Date: October 23, 2020

RE: Radiological Emergency Planning

All Hazards Emergency Planning-Insufficient Radiological Disaster

At the October 19, 2020 NDCAP meeting, we understood Director Phillips to say that the Commonwealth's All Hazards Plan would be sufficient to deal with a radiological emergency at Pilgrim, now that offsite radiological emergency planning is exempted by NRC.

Mary Lampert remarked that FEMA, MEMA, local emergency directors and a long list of others agree radiological disasters are unique and existing all hazards emergency plans are not sufficient. Cited in NRC Commissioner Baran's dissent.¹

Authority MEMA and MDPH- both have state roles offsite radiological emergency planning

1.2 AUTHORITY **General Laws of Massachusetts Chapter 639, Acts of 1950, as amended and codified in Chapter 33 appendix, Section 13-2B**, authorizes the Director of the Massachusetts Emergency Management Agency (MEMA) to make plans for response to potential effects of accidents at nuclear power stations. Additionally, Massachusetts Executive Order No. 303 provides that the MEMA Director should develop radiological emergency response plans for the Massachusetts communities adjacent to the Seabrook Nuclear Power Station in conjunction with other state and local officials and that an effective warning and notification system be established.

Sections 5N and 5K of Chapter 111 of the General Laws of Massachusetts² authorize the Commissioner of Public Health to determine what actions are required to protect public health whenever an incident involving radioactive substances or sources affects any part of Massachusetts. Section 5B of Chapter 111 authorizes the Massachusetts Department of Public Health (MDPH) to regulate the use, storage, and disposal of radioactive materials. Section H of Chapter 111 authorizes the MDPH to maintain a monitoring and surveillance program for All nuclear reactors in the State.

¹ <https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML19305C739>

² General Laws Part I Title XVI Chapter 111 Section 5K Nuclear reactors; monitoring and surveillance; charges and assessments. Section 5K. (A) The department, subject to appropriation, shall adopt rules and regulations that monitor the use and release of nuclear materials, source materials, or radioactive materials, whether irradiated or not, **as they pertain to the operation of nuclear reactors**. Jack Priest opined in an email (October 10, 2020) that the statute did not provide authority to monitor dry casks post operation. Comment: The onsite storage of nuclear waste is material created during operations-waste "pertains to the operation of nuclear reactors."

Radiological Emergency Planning -Overview

On November 4, 2019, the NRC Commission exempted Entergy from requirements for offsite radiological emergency planning. On January 2, 2020, NRC extended the exemption to Holtec, the new owners of Pilgrim Station. These exemptions eliminate requirements for offsite radiological emergency planning, including emergency planning zones (EPZs) and all state & local funding for effectuate those plans ten months after the reactor shutdown date, April 1, 2020. NRC Commissioner Baran dissented from the majority opinion.³ He noted among other points that state's all hazards emergency plans did not work for radiological emergencies, and that FEMA and states such as Massachusetts opposed the exemption.

The NRC allowed the exemptions largely based on its incorrect beliefs that (1) "the very low probability of beyond-design-basis events" that could initiate a zirconium fire in the spent fuel pool and (2) the staff's conclusion that, if such an event occurred, ten hours from the loss of spent fuel pool cooling "would be sufficient time to initiate appropriate [spent fuel pool] mitigating actions" and take any necessary offsite protective actions using an all-hazards emergency plan that would allow evacuation in a timely manner.

NRC's assumptions are not supported by FEMA, MEMA, Multi-State Committee on Emergency Response Planning of the Conference of Radiation Control Program Directors (CRCPD), the States of Ohio, Massachusetts, Vermont, Connecticut and New York,⁴ the Massachusetts legislature created Nuclear Decommissioning Citizen Advisory Group,⁵ EPZ Boards of Selectmen and Emergency Planning Director,⁶ or numerous public interest groups.⁷

NRC's assumptions are not credible:

First, although the events that could cause a spent fuel pool fire or release from a dry casks may be fewer than from an operating reactor, radiological emergency planning has never been exclusively based on the probability of an accident; instead it is based on preparation to protect public health and safety in the event an accident occurs. Unless you can say there is no evacuation potential, you need radiological emergency planning.

Second, FEMA, MEMA, local emergency directors and a long list of others agree radiological disasters are unique and existing all hazards emergency plans are not sufficient. Third, absent

³Ibid

⁴ <https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML19305C739> NRC Commissioner Baran's Dissent SECY-19-0078:Request by Entergy Nuclear Operations for Exemptions from Certain Emergency Planning Requirements for the Pilgrim Nuclear Power Station, Footnotes 5-19.

⁵ <https://www.mass.gov/orgs/nuclear-decommissioning-citizens-advisory-panel> 2018 Annual Report, pg., 16.

⁶ The Towns of Duxbury and Plymouth, for example, have made specific requests to the Pilgrim's licensee to continue financing offsite radiological planning. Documents can be provided on request. The Town of Duxbury at its Annual Town Meeting have voted in support of the licensee to continue funding radiological emergency planning until the spent fuel leaves the site-Article 29, 2014 and Article 39, 2019 available Duxbury Town Clerk.

⁷ Examples: Clean Water Action, Toxics Action Center, MASSPIRG, Greater Boston Physicians for Social Responsibility, Plymouth League of Women Voters.

monies for state and local radiological emergency plans that allows training, communication equipment, notification, traffic control, decontamination equipment and centers etc., NRC's statement that the public could evacuate within 10-hours is absurd on its face.

Risks and Consequences:

- A spent fuel pool fire can result from: a canister that weighs 40 tons drops in the pool during transfer and punctures the floor; a terrorist attack; malfunction of transfer equipment; an earthquake. The consequences, according to studies by the MAAGO,⁸ NRC and Princeton University showed potential contamination to an area (4) times the size of Massachusetts and hundreds of billions in damages and cancers.⁹
- A spent fuel dry cask disaster can result from acts of malice; stress corrosion cracks in the 0.5" thin canister shell; and an earthquake. Each of the 61 dry casks contain 68 spent fuel assemblies, and ½ the Cesium-137 released at Chernobyl.
- A fire onsite in contaminated building during decommissioning can spread radiation offsite.

Evacuation in the event of a radiological accident was impossible when Pilgrim was operating, and without off-site emergency planning it is even less adequate today.



⁸ The Massachusetts Attorney General's Request for a Hearing and Petition for Leave to Intervene With respect to Entergy Nuclear Operations Inc.'s Application for Renewal of the Pilgrim Nuclear Power Plants Operating License and Petition for Backfit Order Requiring New Design features to Protect Against Spent Fuel Pool Accidents, Docket No. 50-293, May 26, 2006 includes a Report to The Massachusetts Attorney General On The Vulnerability of Pilgrim's Spent Fuel Pool- Risks and Risk-Reducing Options Associated with Pool Storage of Spent Nuclear Fuel at the Pilgrim and Vermont Yankee Nuclear Power Plants, Gordon Thompson, May 25,2006.

2. References: Risks and Risk-Reducing Options Associated with Pool Storage of Spent Nuclear Fuel at the Pilgrim and Vermont Yankee Nuclear Power Plants-A report for the Massachusetts Attorney General, Dr. Gordon Thompson, May 25, 2006; Comments on the US Nuclear Regulatory Commission's Draft Consequence Study of a Beyond-Design Basis Earthquake Affecting the Spent Fuel Pool for a US Mark I Boiling Water Reactor, Dr. Gordon Thompson, August 1, 2013; Environmental Impacts of Storing Spent Nuclear Fuel and High-Level Waste from Commercial Nuclear Reactors: A Critique of NRC's Waste Confidence Decision and Environmental Impact Determination, Dr. Gordon Thompson, Feb 6, 2009. Documents available on NRC Electronic Library, ADAMS

⁹ Richard Stone, "Spent fuel fire on U.S. soil could dwarf impact of Fukushima," *Science*, May 24, 2016. (available at: <http://www.sciencemag.org/news/2016/05/spent-fuel-fire-us-soil-could-dwarf-impact-fukushima>)

Consequences Extend Beyond the 5-town, 10-mile Emergency Planning Zone

First, MEMA will lose its yearly assessment needed to fund its radiological emergency planning department. Plans and equipment are needed not only for the towns close to the reactor but also for communities impacted that are downwind but further distant - well beyond 10 miles. Fearing a spent fuel pool fire at Fukushima, the US State Department recommended citizens within 50-miles of Fukushima evacuate. The outer ring on the map below marks 50-miles from Pilgrim. The Japanese Prime Minister, Nato Kan, said if Fukushima's spent fuel pool went, Tokyo, 149 miles from Fukushima, would need to be evacuated and the Japanese economy would crumble.



Second, citizens close to Pilgrim's site in a disaster will eventually evacuate and bring radiation with them on their cars, bodies, personal belongings, and pets. No planning means no decontamination centers. Therefore, where the evacuees travel, stop, washup, and lodge will become contaminated too - spreading contamination through the state and neighboring states.

Third, absent timely evacuation and decontamination, the probability of radiation-linked health impacts increases - cancers, birth defects and reproductive disorders. These will be costly to the state in health care and employment losses.

Who should Pay for Radiological Emergency Planning? Commonwealth Settlement Agreement

Nothing in the Settlement Agreement requires payment to any of the towns in the EPZ to cover their emergency planning costs – that they will continue to incur until all spent nuclear fuel has been removed from the Pilgrim site.¹⁰

¹⁰ During operations and post operations, Pilgrim's owner negotiates annual payments for radiological emergency planning expenses with the state and with each EPZ community. Holtec agreed to pay Duxbury \$65,000 but only

Section IV, Payments, Radiation Monitoring, ISFSI, and Waste Transportation, Para. 18 requires Holtec Pilgrim/HDI to “make payments to ...MEMA [for its operating expenses associated with decommissioning planning, decommissioning activities, and the decommissioning process in accordance with ...Table 2 (MEMA).”

As with the Table 12 payments to DPH, the Table 2 payments are based on questionable assumptions and decrease over time.

2021 - \$1,170,864 or \$500,000 depending on whether federal emergency planning requirements are in effect.

2022 - \$275,000 if all spent fuel has been moved to the ISFSI.

2023-2027 - \$50,000 until Partial Site Release.

2028 - \$32,500 – a half year of decommissioning costs and a half year of ISFSI costs.

2029 until License Termination - \$15,000.

MEMA has an “all hazards plan,” but that plan is not adequate for a radiological emergency. Even Holtec admits that spent nuclear fuel will remain on site until at least 2063. Does anyone seriously think that MEMA can provide the needed plans and protection for \$15,000?

The payments to MEMA under the Settlement Agreement reflect several questionable assumptions:

- i. The costs of MEMA being prepared for a potential radiological emergency will dramatically decrease – from \$500,000 in 2021 to \$250,000 in 2022 (Holtec’s original goal to move spent fuel into dry casks), and then to \$50,000 for 2023-2027 (Holtec’s projected date for Partial Site Release, and to only \$15,000 after 2028.
- ii. Once spent fuel has been moved into dry casks, it incorrectly assumes that there is little or no risk of a radiological release no matter how long the cask remains on site – even though there is no way to effectively inspect the condition of its thin-wall canister and no currently available technology to replace a failed or failing canister.
- iii. It incorrectly assumes that a dry cask failure will have little potential effect on the public health and the economy even though each dry cask contains half as much Cesium-137 as the total released at Chernobyl.
- iv. Even though MEMA’s all-hazards emergency plan does not provide for radiological emergencies, once spent fuel has been moved into dry casks, all MEMA needs to do to protect the public is to review documents, conduct communication checks, and follow what is going on at Pilgrim and what DOE may be doing.
- v. Although Pilgrim’s spent nuclear fuel will remain on site indefinitely, possibly for hundreds of years, all MEMA needs to do after 2029 is to participate in drills and exercises and security meetings.

for one year, 2020 We believe Kingston and Carver received the same. Marshfield has sued Holtec. Plymouth received considerably more but less than it wanted.

Settlement Agreements with EPZ Towns, Reception Center Communities and Holtec

The five towns within Pilgrim's Emergency Planning Zone and the three towns hosting Reception Centers (RC) negotiated separate agreements with Holtec Pilgrim/HDI.

Carver: \$75,000 for three months of EPZ and to unwind the RERP and breakdown the alternate EOF

Duxbury: \$63,750, broken down as \$21,250 for the three months of the EPZ in 2020 and \$42,500 to unwind the RERP. Also, it says that if Duxbury provides mutual aid to the site at any point during the 8-year decommissioning and its equipment becomes contaminated Holtec will provide replacement at no cost to the community.

Kingston: \$63,750, with the same break down and language as Duxbury.

Marshfield: \$120,196.21 for three months of EPZ payment. Marshfield has chosen to go challenge Holtec in court.

Plymouth: It has a 2 ½ year agreement through June 30, 2022 as the host community for Police and Fire services. Breaks down as \$150,000 1/1/20 to 6/30/20 and then \$230,000 the following two years 7/1/20-6/30/21 and 7/1/21-6/30/22

Braintree RC: \$42,000 Three months plus costs to breakdown the program

Taunton RC: \$56,500 three months plus costs to breakdown the program

Bridgewater RC: \$57,500 three months plus costs to breakdown the program

State Legislation

Two bills are in the State Legislature, before House Ways and Means, July 2020. The Commonwealth and individual town settlement agreements likely will make it more difficult for the bills to pass. We encourage MEMA, NDCAP members and the towns to work with their state representatives.

- a. H.3492, An Act relative to community radiological emergency response funds. An amended version, would require the licensee of each existing and proposed nuclear power plant in the Commonwealth, [to]fully fund offsite radiological emergency response expenses incurred by the Commonwealth or a municipality post closure until all the reactor's spent fuel leaves the site.
- b. H. 1970, An Act to Amend Section 5 K E of Chapter 111 would permit MDPH to assess the operators of existing and proposed nuclear power plants during operations and post closure not less than \$500,000 per facility. MDPH shares radiological emergency planning responsibilities with MEMA.