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June 16, 2006

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To: PilgrimEIS@nrc.gov

Chief
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Division of Administrative Services
Office of Administration
Mailstop T-6D59
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

RE: Entergy Nuclear Operations, Inc. - Pilgrim Nuclear Power Station
Regarding the Renewal of Facility Operating License No. DPR-35 for a
20-Year Period, Docket No. 50-293
Environmental Scoping Comments

Dear Sir/Madam:

Pursuant to the Federal Register Notice of April 14, 2006 (Volume 71, Number 072, Page 19554), the Town of Plymouth, in Plymouth County, Massachusetts hereby provides its comments concerning the environmental scope of the license renewal review for the Pilgrim Nuclear Power Station owned by Entergy Nuclear Operations, Inc. and located within the Town.

Respectfully submitted,



Sheila S. Hollis
Duane Morris LLP
Attorneys for Town of Plymouth

SUNSI Renew Complete

Template = ADM-013

E-RIDS = ADM-03

Call = R. Schaaf (RES)

COMMENTS

I. THE TOWN OF PLYMOUTH

The Pilgrim site is located on the western shore of Cape Cod Bay in the Town of Plymouth, Plymouth County, Massachusetts (the "Town"). As such, the Town is in direct proximity to any nuclear incidents that may occur. With a current estimated population of approximately 59,000, an incident at Pilgrim that emits radioactive material could have devastating impacts on the health of Town residents. In addition, the Town economy is heavily reliant on tourism. Any nuclear incident would deal a severe blow to tourism and the related economy for years to come and have a potentially ruinous effect on the local economy. Thus, the Town urges the Commission to fully review all aspects of the Pilgrim plant to assure that the citizens of Plymouth and surrounding areas are fully protected from negative or dangerous environmental impacts associated with the plant's relicensing.

While many of these considerations were taken into account at the time of the original licensing, relicensing is a time to consider advancements in nuclear plant technologies, safety issues, evacuation scenarios, long-term health impacts, and other science and technology advancements that provide us with information and concerns that were not fully appreciated thirty years ago.

The Town was founded in 1620 by the Pilgrims escaping religious persecution in England and is known as "America's Hometown." As such, the Town is the cornerstone of American freedom and values. Every year thousands of visitors come to the Town to visit not only Plymouth Rock, but also the other historical sites in and around the Plymouth area. Typically, tourists travel not only to the Town, but also up to Boston or out to Cape Code and other coastal areas. In 2003, for example, travel expenditures for Plymouth County were \$353

million (excluding payroll, state tax receipts and local tax receipts), with the Town receiving a significant portion of those amounts. The contribution of tourism to the health of the local economy, therefore, is central.

The population of the Town includes approximately 14,000 families, with tens of thousands of children who would be highly vulnerable to a radioactive leak or other event which could expose them to radioactive material above federally acceptable levels. In addition, there is a sizable retirement community, many members of which also would be vulnerable to overexposure to radioactive material.

The Town is continuing to experience population growth. Increased population places greater burdens on local, state and federal infrastructure. With little potential for major highway expansion, the evacuation of the Town in the event of a nuclear incident is extraordinarily challenging. Significant radioactive emissions would affect not only the Town, but depending on wind direction, could affect many other nearby cities and towns, including Boston, a mere 40 miles away. Thus, the need for extreme care in the review is heightened.

The Town recognizes that Pilgrim plays an important role in the supply of power to this area of New England. It is not easily replaceable, and the Town is not, at this time, recommending its replacement. However, as is set forth below, the Town has significant concerns about the safety of the aging Pilgrim plant in particular, to an extent with Entergy, the operator, in light of recently made public missteps at Pilgrim and other plants, and some aspects of technology in use at the Pilgrim plant. Due to the potential severity of impacts on the human population and other aspects of the environment from any nuclear plant accident or other mishap, there are many issues that must be fully considered and addressed by the Commission. As an example, the recent decision by the U.S. Court of Appeals for the Ninth Circuit in *San Luis*

Obispo Mothers v. NRC that the Commission is required to consider the possibility of terrorist attacks in conducting environmental reviews required by the National Environmental Policy Act supports the notion of a complete and thorough review of the environmental impacts of continued operation of the Pilgrim plant for the twenty year license extension. We set out in basic form the nature of the Town's concerns, and look forward to participating in a full review of these and additional issues raised by other commenters and interested parties.

II. SAFETY ISSUES

A. CRACKING IN TIE RODS/ POTENTIAL LOSS OF CORE SHROUD INTEGRITY

Some information made available to the Town indicates that there is a possibility that the use of tie rods at GE US BWR plants like Pilgrim as a device to repair the core shroud could create a safety hazard. Specifically, GE has identified Pilgrim as a plant where the tie rod support material may be susceptible to cracking associated with Intergranular Stress Corrosion Cracking ("IGSCC") if subjected to sustained, large peak stress conditions. Cracking in the tie rods could lead to a substantial safety hazard at Pilgrim, such as loss of core shroud configuration integrity during postulated accident conditions. Loss of core shroud integrity could impact the ability to maintain adequate core cooling, a significant risk to safe operation of the plant which must be addressed during the renewal period. It is critical that tie rods remain effective in maintaining core shroud configuration integrity during sustained, large peak stress conditions to minimize the likelihood of a substantial safety hazard at Pilgrim.

Moreover, as reactor components age, it is important to inspect the right components within the right timeframe. The Aging Management Plan in the application does not contain adequate assurance that all components requiring inspection and maintenance will, in fact, be subject to inspection and maintenance in a timely manner. For example, a full cycle of shroud

inspections is completed only over a 10-year period. Under these circumstances, there is no way to know until that period ends what the condition of the shroud during the prior ten years actually may be.

B. RISKS OF LEAKAGE OF RADIOACTIVELY CONTAMINATED WATER INCREASE WITH INADEQUATE MONITORING AND INSPECTION

Older plants, such as Pilgrim, are more likely to experience corrosion and leakage problems that can result in the release of amounts of radioactive materials into the groundwater. Exposure to radiation from any such leaks represents a threat to human health, and is a violation of NRC regulations. Adequate inspection and monitoring of any systems and components that carry radioactive water should be a critical part of Pilgrim's Aging Management Plan to minimize the likelihood of leakage and associated danger to the safety and welfare of the public.

A number of leaks in recent years from underground pipes and tanks releasing tritiated water from spent fuel pools into the groundwater gives rise to concerns about the potential for the similar release of radioactive materials at the Pilgrim plant. Leaks from a spent fuel pool are not uncommon. Indeed, there were leaks reported from three nuclear power plants in 2005. The Indian Point plant in New York (also owned by Entergy) experienced a tritium leakage into groundwater likely due to a crack in the spent fuel pool concrete support. The Braidwood nuclear power station in Illinois also had leaking tritium and its owners, Exelon Nuclear, recently agreed to a court order to force it to begin clean-up.¹ The NRC also was informed that the spent fuel pool at the Connecticut Yankee plant in Haddam, Connecticut was leaking into the ground at the rate of several gallons per day.² Other instances of groundwater contamination have been

¹ Chicago Tribune, *Judge Orders Clean-Up at Nuclear Plant*, (May 24, 2006)

² Boston Globe, *Nuclear Industry Adopts New Policies on Radioactive Water* (May 9, 2006).

reported at nuclear facilities in Arizona, California, and Florida.³ The NRC itself has acknowledged the severity of the problem associated with tritium contamination of groundwater associated with equipment degradation and is assessing what changes, if any, are needed to the agency's rules and regulations to better protect the public health and safety.⁴ In the case of Exelon Nuclear, the NRC issued a preliminary white finding for "apparent violations" related to tritium discharges at its Braidwood plant.⁵ The NRC report cited "multiple failures" by Exelon staff "to adequately evaluate the radiological hazards associated with the leaks . . . and to assess the resultant environmental impact," concluding that Exelon "did not perform adequate, timely radiological evaluations following the historical leaks, which impacted [Exelon's] ability to assess the environmental impact from the releases and mitigate the releases; did not account for the potential public impact; and did not adequately control licensed material."⁶

The potential for tritium leaks at the Pilgrim plant poses a unique hazard to the public health of the residents of the Town and neighboring areas because the Town and its neighbor, Carver, Massachusetts, rely almost totally on the Plymouth-Carver aquifer (the "Aquifer") for drinking water, and the Aquifer partially supplies neighboring communities as well. The Aquifer covers approximately 140 square miles in area with an estimated 500 billion gallons of potable water. Composed of saturated glacial sand and gravel, the Aquifer ranges in depth from 20 feet to over 200 feet. The Aquifer is designated by the Environmental Protection Agency as a "Sole

³ Id.

⁴ See <http://www.nrc.gov/reactors/operating/ops-experience/grndwtr-contam-tritium.html>

⁵ Inside NRC, *NRC issues preliminary white finding on Braidwood tritium leaks*, May 29, 2006 at p. 5.

⁶ Id.

Source Aquifer” – that is, one which provides at least fifty percent of the water supply to a given community – it is the second largest Aquifer in Massachusetts and one of only 70 Sole Source Aquifers in the United States.

Of course, while the Aquifer has large reserves, it is not a closed system. The Aquifer is recharged through the natural seepage of precipitation, septic system discharges, and agricultural water. Accordingly, any leakage of tritiated water from the Pilgrim plant into the groundwater could infiltrate the Aquifer, and thereby contaminate the drinking water supplies for the Town as well as for the heavy agricultural use of the Aquifer,⁷ with potentially serious health implications for those consuming the water or the farm products grown with it.⁸

The Aging Management Plan for Pilgrim provides that underground pipes and tanks will be inspected when excavated during maintenance, and that a focused inspection will be performed within ten years unless an opportunistic inspection occurs within this period. However, in light of the increasing frequency of leakage events at analogous nuclear plants in recent years, a more frequent and thorough inspection of all components that contain radioactive water at the Pilgrim plant is warranted to avoid the risk of leakages going undetected and to better safeguard the public health of the residents of the Town and neighboring areas.

⁷ In the mid-1980s, some 82% of the draw from the Aquifer was used for cranberry production. See, Hansen, Bruce P. and Wayne Laphman, *Geohydrology and Simulated Ground-water Flow, Plymouth-Carver Aquifer, Southeastern Massachusetts*, U.S. Geological Survey, Water-Resources Investigations Report 90-4204.

⁸ In addition, since a variety of private and public wells draw from the Aquifer, it would be difficult to impose any centralized system to monitor – let alone remove – any contaminated water once such contaminants have leached into the groundwater supply.

C. INADEQUATE MONITORING OF SPENT FUEL POOL

It recently came to light that certain quantities of uranium were missing from Pilgrim, with the location of the nuclear material unknown to Entergy and the number of the missing radioactive devices increasing, bringing to nine the number of missing monitors containing uranium 235. It has not been determined conclusively whether the radioactive materials are on- or off-site. While Entergy officials maintain that the missing uranium does not represent a threat to the public health or safety, the delayed detection of the disappearance of the radioactive materials in the first instance, the discovery of more devices missing than initially believed, combined with the apparent inability to locate the monitors highlight gaps in the monitoring plan at the Pilgrim plant which, if not remedied during the license renewal period, could endanger the public health and safety of Town inhabitants, as well as the environment. As Mr. Neil Sheehan, spokesman for the Commission, has emphasized: “[The materials] are hot. That’s why they’re controlled . . . It’s important to store them appropriately and keep track of them.” Mr. Sheehan has further indicated that “[the Commission] expect[s] Entergy to do a thorough job of accounting for this material to make sure it’s where it should be.”

Extension of Pilgrim’s license should be made contingent upon a thorough investigation and review of all safety measures. The relicensing should present an opportunity, indeed a mandate, to protect Plymouth against any safety violations. Upon conclusion of the Commission’s investigation of this matter, the necessary corrective measures should be adopted as part of any renewed license for Pilgrim.

Furthermore, given the old age of the Pilgrim plant and in light of the risks highlighted above, the Town is concerned that there is no plan to replace or modify major structures and components at Pilgrim. Indeed, in the ER, Entergy indicates that it does not intend to conduct

any refurbishment activities during the renewal period,⁹ but that “[r]outine replacement of certain components during the period of extended operation is expected to occur within the bounds of normal plant maintenance.”¹⁰ Inasmuch as there is no planned refurbishment and the renewal period will extend for twenty years, the Town submits that Entergy should be required to demonstrate how the lack of refurbishment activities will not affect safe operation of the plant during the renewal period.

D. WATER QUALITY CERTIFICATION

In the ER, Entergy claims to be in “continued compliance with applicable [Clean Water Act (“CWA”)] standards.”¹¹ Entergy states that the plant received water quality certifications from the relevant Massachusetts authorities in the early 1970s (as set forth in Attachment A to the ER) and that the National Pollutant Discharge Elimination System (“NPDES”) permit for Pilgrim reflects continued compliance with relevant CWA standards, excerpts of which also are included in Attachment A. The NPDES permit included in Attachment A, however, appears to have expired in 1996. While Entergy states elsewhere in the ER that EPA Region I, the NPDES permitting authority for Massachusetts, is reviewing an Entergy application for renewal of the NPDES permit with respect to Pilgrim (*see* ER, Section 4.2.5), Entergy should be required to provide further evidence (besides the excerpts from Attachment A) documenting its alleged continued compliance with the CWA standards and/or the conclusions of EPA Region I regarding the plant’s continued compliance with appropriate CWA standards. Given the plant’s coastal location, the importance of the coastal waters to the region’s economy, and the use of the

⁹ ER, Section 4.0.

¹⁰ ER, Section 3.3.

¹¹ ER, Section 9.2.2.

coastal water for recreational purposes, it is essential to confirm that Pilgrim will not violate applicable water quality standards during the renewal period and jeopardize aquatic life or the health of those using those waters.

III. SEVERE ACCIDENT MITIGATION ALTERNATIVES (SAMA) ANALYSIS IN ENVIRONMENTAL REPORT

The Environmental Report included in Entergy's license renewal application sets forth a flawed SAMA analysis that misstates the consequences of a severe accident at Pilgrim.

Specifically, the SAMA analysis uses inaccurate input data that underestimates off-site health exposure and the economic consequences of severe accidents at the plant.

1. Meteorological Input Data

The meteorological input to the modeling tool used by Entergy to characterize weather conditions, and therefore the radiological consequences from a severe accident at the Pilgrim plant, are inaccurate.

While Pilgrim's Meteorological Monitoring System currently meets applicable Commission requirements, the ER's straight-line Gaussian plume model to estimate the location and magnitude of predicted radionuclide concentrations and resultant doses received from a postulated plant accident is inappropriate for the Pilgrim station. With the Gaussian plume model, the speed and direction of prospectively lethal clouds are determined by the initial wind speed and direction at the time of release and do not account for variable atmospheric conditions, whether in time or in space. Further, the model does not consider terrain effects, which can significantly affect wind field patterns and dispersion. Variable wind conditions over time and space, likely in the coastal, hilly terrain area surrounding the Town, makes resultant predictions of the movement of lethal airborne materials based on just onsite meteorological data, with

simplistic straight line air quality dispersion models, severely unreliable for evacuation planning purposes.

Winds along the coast of Massachusetts, and therefore the Town, are significantly affected by the sea breeze effect, which is critically important in estimating contaminant exposures in coastal areas. During moderate to strong wind conditions, such as those associated with coastal storms, approaching warm fronts, or after the passage of cold fronts, the wind direction throughout the region should be fairly uniform as would be depicted from one of Entergy's meteorological towers. However, abrupt wind direction shifts and wind speed changes can occur during the passage of such large-scale weather systems throughout the region. When wind speed starts to get lighter (e.g., below 5-10 mph), and depending upon the time of day and season, the terrain also will affect regional wind patterns in a more pronounced manner. During the spring and summer months whenever day-to-day large-scale regional weather influences are absent (storms and fronts), strong temperature contrasts between the warmer land and the colder Cape Cod Bay can result in sea breeze conditions on sunny, fair weather days. At times, sea breeze influences can penetrate miles inland. Weaker land breezes also can occur during other times, particularly at night, when the land surface is colder than the water body surface. Shifting wind patterns (including temporary stagnations, recirculations, and wind flow reversals) can occur during these daily sea and land breeze conditions, and can persist for several hours. Any shifting wind patterns away from Pilgrim could produce a different plume trajectory (and resultant concentrations and radiological doses at specific locations) than what the application depicts.

The license renewal application fails to provide for adequate meteorological monitoring. One of the ways through which emergency authorities determine what areas should be evacuated

in case of an emergency is by measuring wind direction and speed. However, the only two places where Entergy proposes to measure these during the renewal period are on its property, at the plant. This may yield inadequate regional data regarding wind speed and direction, and in turn yield likely inaccurate judgments concerning the plume trajectory of radioactive contaminants. The proposed monitoring could lead to official decisions about evacuation and sheltering in place that would be flawed and dangerous.

Additional regional meteorological monitoring stations should be installed and included as part of Entergy's emergency planning program during the renewal period to allow for improved live, real-time monitoring of geographic variations in wind fields. Moreover, Entergy should be required to upgrade its straight-line air quality models with more advanced variable trajectory models that can use either single station or multiple station meteorological data. These modifications should be given significant consideration, particularly considering the rapidly growing regional population. Understanding and planning for potential consequences of postulated (and realistic) accident release scenarios in a technically accurate and reliable manner can serve as a useful emergency planning forecasting tool, as well as a "hindcasting" tool, that is, what radiological doses did actually occur at various geographic locations in the event of an accident.

2. Emergency Response Data

The assumptions and input data used in the SAMA analysis does not provide accurate conclusions regarding emergency response consequences in a severe accident.

The ER assumes, in its sensitivity case, that the longest likely delay before residents begin to evacuate is two hours. This assumption, however, is misguided because notice of the evacuation could take longer than two hours to reach residents. While Pilgrim's sirens meet

federal requirements, there is significant danger that the sirens that are in place often are not heard inside homes, businesses, and cars, which means that many of the people the sirens exist to warn are unable to hear the warnings, which impacts evacuation and sheltering plans. It is thus highly likely that the delay in evacuating will be well in excess of the two hours assumed in Entergy's sensitivity case. These assumptions do not indicate what steps, beyond sirens, will be used to instigate the evacuation and what form such information should take. The ER does not detail any secondary analysis of how effective the cue for evacuation will be but assumes only that two hours will be an average response time.

Moreover, even if information of a warning reaches an individual quickly, it has been noted that "people simply do not take action in response to warning message as soon as they hear the first warning . . . unless there is a clear explanation of the need for an immediate response, they might wait for a second, third or fourth official warning before responding."¹² Individuals do not simply comply with official direction. Instead, they use warning signals as a cue to seek out additional information, from which to make their decisions to evacuate or not. While parallel sources of information may improve response time, other factors – whether the family is already together and accounted for (as opposed to spread out at school or work) or what the response of neighbors is to an evacuation order – may reduce compliance or delay evacuation response time.¹³

¹² "The social psychology of public response to warnings of a nuclear power accident." Mileti, Dennis S. and Lori Peek, *Journal of Hazardous Materials* 75 (2000) 181-194.

¹³ *Id.*, 188-89.

There are both specific, physical steps Pilgrim can take – such as, at a minimum, the addition of more sirens throughout the Town – as well as developing a more robust information and warning system. These steps are not addressed in the ER.

Additionally, the model used by Entergy in its ER does not take into account the segment of the population who, regardless of intent, will be unable to evacuate and must shelter in place. The sick and the elderly may not be able to drive. Although shelter-in-place can be an effective tool where evacuation is not appropriate, a number of studies show that for an individual to obtain the maximum benefit of taking shelter at home or in the office, the individual will need to tape windows, doors, and vents shut and, if possible, to do so in a room with no external walls. One study showed that sealing of a bathroom in a home could be between 4 and 17 times more effective in reducing air exchange than simply shutting the doors and windows.¹⁴ And those individuals who are left behind in an evacuation may be the least able to take such additional precautionary measures. The ER does not take into account any shelter-in-place program, even the most rudimentary effort simply to stay indoors, let alone one ensuring that individuals forced to stay at home receive the maximum protection from such sheltering programs.

Emergency planning and a severe accident analysis should assume reasonably foreseeable difficulties associated with notification, traffic conditions, panic, ensuing accidents and so on, with due consideration of the fact that not all individuals will be willing or able to evacuate, either immediately or at all, in the case of an alarm. The ER is deficient in this respect.

Setting aside the weaknesses in Entergy's emergency warning system, there is a limited number of roads in and around the Town to accommodate a mass evacuation in the event of an

¹⁴ "Effectiveness of expedient sheltering in place in a residence." Jetter, James J. and Calvin Whitfield, *Journal of Hazardous Materials A119* (2005) 31-40.

accident. This factor, combined with a significant increase in the area population over the last thirty years since the plant first began operations (145% population growth over the last two decades), will lead to traffic congestion during evacuation operations, which in turn means that some residents will be unable to leave the area and will need to shelter in place. In assessing emergency response plans, it is critical that the assumptions underlying such plans reflect up-to-date information. The ER, for example, at Table 2-7, "Traffic Counts for Roads in the Vicinity of PNPS," in looking at estimated average daily traffic volume around the plant, is relying on data that, with one exception, is from the 1990s (*i.e.*, 1992, 1995, 1998 and 1990). There has been an influx in population in the region since those years, with more households using cars and the roadways near the plant, with an attendant effect on traffic patterns. These factors must be taken into account for emergency planning purposes; the use of outdated data for such purposes could have dangerous repercussions for the safety and health of the residents of the Town and neighboring areas.

3. Loss of Economic Activity in Plymouth

The economic model used in the SAMA analysis does not take into account the loss of economic activity in the Town as an economic cost of a moderate or severe accident at Pilgrim. The tourism sector is critically important to the economic vitality of the Town and Plymouth County. A multitude of historical sites (*e.g.*, Plymouth Rock, the Mayflower, Plimoth Plantation) are located in close proximity to Pilgrim and attract thousands of visitors to the area. Assuming appropriate clean-up and decontamination of these sites, it is unlikely that tourism would ever recover fully after a severe accident, which would be devastating for the Town's economy. The Town also would lose travel expenditures associated with travelers on their way to Cape Cod, Nantucket and Martha's Vineyard; travel through Plymouth County is necessary to

reach those destinations. Travel to those areas clearly would be restricted in the event of a severe accident at Pilgrim (taking into account that winds often blow toward Cape Code and the islands), reducing travel expenditures not only in the Town but also in surrounding areas. The loss of economic infrastructure and tourism should be considered in the SAMA analysis to ensure that “realistic” mitigation alternatives are explored, taking such factors into account.¹⁵

4. Spent Fuel Pool Accident

The SAMA analysis fails to address the environmental impacts of the on-site storage of spent fuel assemblies which will be significantly increased during the renewal period; it does not contemplate a severe accident in the spent fuel pool, but should.¹⁶

According to Entergy, the facility will run out of space in its spent fuel pool by 2012 and there are no prospects for off-site storage in the foreseeable future. The ER states simply and cryptically with respect to spent fuel storage during the 20-year renewal period: “[t]he spent fuel

¹⁵ In addition, the Town is concerned about the economic impact of an accident, as well as routine operations at the plant, on commercial fisheries in the area. The local population of winter flounder, in particular, is of significant concern because it provides an important commercial fishery and because the area around the plant serves as spawning, nursery, and feeding grounds for the species. A moderate or severe accident at the plant would have a deleterious effect on the flounder population, and therefore commercial fishery in the region. While the ER concludes that plant operations “have not had a significant effect on local and regional populations of fish and shellfish,” (ER, Section 2.2.5) the Town submits that additional evaluation of the intake effects to winter flounder are warranted to assess accurately the long-term implications on this species of continued operations at Pilgrim during the renewal period.

¹⁶ See generally “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 Plant Operating License and Petition for Backfit Order Requiring New Design Features to Protect Against Spent Fuel Accidents,” filed on submitted 26, 2006, in Docket No. 50-293, including Exhibit 1 (Gordon Thompson, *Risks and Risk-Reducing Options Associated With Pool Storage of Spent Nuclear Fuel at the Pilgrim and Vermont Yankee Nuclear Power Plants*, May 25, 2006) and Exhibit 2 (Jan Beyea, *Report to the Massachusetts Attorney General on the Potential Consequences of a Spent-fuel Pool Fire at the Pilgrim or Vermont Yankee Nuclear Plant*, May 25, 2006).

assemblies are then stored for a period of time in the spent fuel pool in the reactor building and may later be transferred to dry storage, if needed, at an onsite interim spent fuel storage installation provided necessary regulatory approvals are obtained.”¹⁷ Thus, a significant amount of “hot” spent fuel will remain in the spent fuel pool at Pilgrim, which represents a long-term risk to the Town that is not adequately addressed in the license renewal application. The issue of on-site storage of spent fuel was the project under analysis in the case of Pacific Gas and Electric Company’s nuclear plant that led the U.S. Court of Appeals for the Ninth Circuit decision finding that examination of the consequences of a terrorist attack was required. Hence, the need for additional storage is known and foreseeable, and therefore an additional impact that must be considered.

■ On-site storage of spent fuel assemblies which, already densely packed in the cooling pool, will be increased by fifty percent during the renewal period. The spent fuel will remain on-site longer than was anticipated and is more vulnerable than previously known to accidental fires and malicious attacks. The Pilgrim plant operator recently has stated that “[the plant] will run out of space in 2012. This was never intended to be a repository for any length of time.”¹⁸ Accordingly, the ER should address the likely impacts of on-site storage for the years to come.

Likewise, the ER should address the risk of an accidental spent fuel fire at the plant. The risk of fire is increased because the spent fuel is densely packaged in “high-density” storage racks. In the event that water in the fuel pool were lost (due to an intentional attack on the plant, for example), cooling of the fuel assemblies would be inhibited and the assemblies could ignite

¹⁷ ER, Section 3.2.3, p. 3-4.

¹⁸ *Decision Looms Over Pilgrim*, Carolyn Y. Johnson, Boston Globe (April 16, 2006).

rapidly and spread within the pool, leading to a significant atmospheric release of radioactive isotopes with great threat to public health and the environment.

Finally, the spent fuel pool is vulnerable to a terrorist attack. The reactors at the plant are particularly vulnerable to attacks on their fuel pools because these are located in the reactor building well above ground level and usually have thin steel superstructures. Entergy, however, has not addressed this issue in its SAMA analysis. *See also* Section IV titled “Threats of Terrorist Attacks and Sabotage at Pilgrim” immediately below.

IV. THREATS OF TERRORIST ATTACKS AND SABOTAGE AT PILGRIM

The environmental impacts that must be considered in an EIS include “reasonably foreseeable” impacts that have “catastrophic consequences, even if their probability of occurrence is low.” 40 C.F.R. § 1502.22(b)(1). In the post-September 11, 2001 world, the possibility of a terrorist attack at a nuclear plant is not so remote and speculative, and should be part of the Commission’s environmental review with respect to Entergy’s license renewal application. A recent federal court decision agreed with this proposed scope of review.

The recent ruling by the U.S. Court of Appeals for the 9th Circuit in *San Luis Obispo Mothers for Peace v. NRC*, No. 03-74628, rejected arguments that the potential for terrorist attacks was too remote and “highly speculative” to require evaluation in environmental reviews required for major projects by the National Environmental Policy Act (“NEPA”). The court found “. . . in considering the policy goals of NEPA and the rule of reasonableness that governs its application, the possibility of terrorist attack is not so ‘remote and highly speculative’ as to be beyond NEPA’s requirements.”¹⁹

¹⁹ *San Luis Obispo Mothers v. NRC*, Case 03-74628, Decision dated June 2, 2006, slip op. at para. 14.

The case concerns PG&E's application to the Commission pursuant to 10 C.F.R. Part 72 for a license to construct and operate a dry cask storage facility at PG&E's Diablo Canyon nuclear power plant. The court disagreed with the Commission that the possibility of a terrorist attack on a nuclear facility is so remote and speculative that the potential consequences of such an attack need not be considered in a NEPA review, finding that the Commission's conclusion was unsupported as a matter of law. The court further noted that the Commission's position "is inconsistent with the government's efforts and expenditures to combat this type of terrorist attack against nuclear facilities,"²⁰ and, indeed, the Commission's own post-September 11th efforts against the threat of terrorism.²¹ The fact that the probability of the risk of a terrorist attack was not easily quantifiable did not authorize the Commission to dismiss the risk of terrorist attacks altogether, concluded the court. "No provision of NEPA, or any other authority cited by the Commission, allows the NRC to eliminate a possible environmental consequence from analysis by labeling the risk as 'unquantifiable.'"²² According to the court, "[i]f the risk of a terrorist attack is not insignificant, then NEPA obligates the NRC to take a 'hard look' at the environmental consequences of that risk."²³ Finally, the court rejected as unreasonable the Commission's argument that it cannot comply with its NEPA mandate because of security risks, noting "[t]here is no support for the use of security concerns as an excuse from NEPA's requirements."²⁴ The court emphasized "[t]here is no 'national defense' exception to NEPA . . .

²⁰ Id. at para. 12.

²¹ Id.

²² Id. at para. 15.

²³ Id. at para. 16.

²⁴ Id. at para. 19.

any federal agency, must carry out its NEPA mandate to the fullest extent possible and this mandate includes weighing the environmental costs of the [project] even though the project has serious security implications.”²⁵

Thus, the potential consequences of a terrorist attack should be considered in the scope of the environmental review for Pilgrim. Entergy’s ER does not address the environmental impacts of a terrorist attack at the plant. Consistent with the court’s ruling and NEPA requirements, Entergy’s ER should be amended to examine these consequences.

V. EXCESSIVE RADIOACTIVE CONTAMINATION DUE TO EMISSIONS FROM PILGRIM

Entergy states that “[v]ery low levels of radioactivity may be released in plant effluents if they meet the limits specified in NRC’s regulations. These releases are closely monitored and evaluated for compliance with the NRC restrictions in accordance with the PNPS Offsite Dose Calculation Manual.” ER Appendix E.3.2.3.1. This implies that there will be no danger to public health from routine releases since they will be monitored and will not exceed federal limits. However, the system in place to monitor radiological releases at Pilgrim is inadequate and could result in a health hazard to residents in the Town and neighboring areas. Moreover, given that the population in and around the Town has increased dramatically in the last 30 years, the radiological dose effect on the population will be far more significant than originally anticipated. When the plant was built in the 1970s, Plymouth was a quiet rural community with a small population that grew seasonally through tourism. Today, Plymouth’s year-round population has more than tripled and it has become a year-round “city.” Pilgrim now is located

²⁵ Id.

in the fastest growing region in Massachusetts, which raises considerable implications for postulated radiological dose effects.

VI. CONCLUSION

The Town, for the reasons set forth above, respectfully requests that the Commission take into consideration the foregoing comments in determining the scope of the environmental review associated with the application to extend the operating license for the Pilgrim plant.

Respectfully submitted,



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