UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
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BOSTON, MASSACHUSETTS 02114-2023

February 28, 2007

Chief, Rules Review and Directives Branch
U.S. Nuclear Regulatory Commission
Mail Stop T6-D59
Washington, DC 20555-0001

Re: Generic Environmental Impact Statement for License Renewal of Nuclear Plants Supplement 29 Regarding the Pilgrim Nuclear Power Station, Draft Report for Comment (CEQ #20060510)

Dear Sir/Madam:

In accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act we have reviewed the Nuclear Regulatory Commission's (NRC's) Draft Supplemental Environmental Impact Statement (DSEIS) for License Renewal of the Pilgrim Nuclear Power Station (Pilgrim Station) in Plymouth, Massachusetts.

According to the DSEIS, Entergy Nuclear Operations, Inc. (Entergy or the applicant) has requested a 20-year renewal of the facility operating license (extending the license to 2032) for Pilgrim Station. Pilgrim Station is a 715 megawatt electric generating station adjacent to Cape Cod Bay. Commercial operation of the station began in December 1972. Pilgrim Station's cooling water system provides once-through cooling water to the condenser and uses up to 510 million gallons per day of water from Cape Cod Bay. Cooling water passing through the condensers undergoes a temperature rise of about 32°F above ambient temperature before it is discharged back into the bay.

The DSEIS was prepared to provide site specific information to supplement NRC's 1996 Generic EIS for License Renewal of Nuclear Plants. The DSEIS contains the NRC staff's preliminary recommendation that adverse environmental effects of license renewal at Pilgrim Station "are not so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable." (DSEIS, page xxi).

Operation of Pilgrim Station has resulted in a range of impacts to the ecosystem of Cape Cod Bay. EPA offered scoping comments to the NRC in June, 2006, that recommended that the EIS pay particular attention to impacts associated with the entrainment of fish eggs and larvae and the impingement of juvenile and adult fish as a result of plant operations, especially with respect to winter flounder, Atlantic cod, and rainbow smelt. EPA's comments also noted that winter flounder is a species of particular interest due to

its commercial, recreational and ecological importance and that estimates of winter flounder Age-3 adult equivalent losses due to entrainment and impingement as reported by Pilgrim Station in annual monitoring reports have ranged from <1 % of the Cape Cod Bay population to almost 30% of the population annually. EPA's comments noted that the NRC should use documented impacts to the marine environment from the thirty-four years that Pilgrim Station has been in operation to evaluate the direct, indirect, and cumulative impacts associated with a twenty year license extension. In addition, EPA recommended that the EIS explore alternative modes of operation that would avoid and minimize environmental impacts (such as changes to water quality and biological effects from the facility's discharges and biological effects from the entrainment and impingement of marine organisms by the facilities cooling water intake structure (CWIS)) associated with the current mode of operation.

EPA's comments on the DSEIS, which are contained in the attachment to this letter, highlight areas where additional information is needed to more fully describe the impacts of the Pilgrim Station facility. Specifically, these comments address the evaluation of alternative modes of facility operation, alternative technologies and mitigation measures and the assessment of the environmental impacts of these alternatives, including the alternative of continuing current operations. Environmental impacts discussed in our comments include entrainment and impingement impacts on marine organisms; the impacts of cooling water discharges and thermal backwash operations; and the fish return system. In particular, we recommend that the Final Supplemental Environmental Impact Statement (FSEIS) evaluate measures such as retrofitting the once-through cooling system with closed-cycle cooling to mitigate adverse impacts identified in the DSEIS such as entrainment and impingement. We encourage the NRC to address these issues prior to the close of the NEPA process.

The intake and discharge of water at Pilgrim Station is regulated under EPA's Clean Water Act's National Pollutant Discharge Elimination System (NPDES) permit. As discussed in the DSEIS, Entergy has submitted an application to EPA for renewal of the Pilgrim Station NPDES permit. The comments in this letter are based solely on our review of the information in the DSEIS from the standpoint of our NEPA and CAA Section 309 responsibilities and are not intended to address the requirements of the Clean Water Act NPDES permit. We again note that while we encourage the NRC to fully analyze the issues described in this letter, we do not expect the FSEIS to draw conclusions as to whether changes to plant operations and existing permit conditions governing discharges and cooling water intake are necessary to meet the requirements of the Clean Water Act, as this responsibility rests with the EPA.

For the reasons discussed above (and in the attachment which follows), EPA has rated this DSEIS "EC-2 Environmental Concerns-Insufficient Information" in accordance with EPA's national rating system, a description of which is attached to this letter. We look

forward to reviewing responses to the issues highlighted in this letter and technical attachment in the FSEIS. My staff is available to provide additional input, as necessary, to help the NRC respond to the issues discussed in this letter. Please feel free to contact Timothy Timmermann of the Office of Environmental Review at 617/918-1025 if you wish to discuss these comments further.

Sincerely,

Robert W. Varney
Regional Administrator

Attachment

Summary of Rating Definitions and Follow-up Action

Environmental Impact of the Action

LO--Lack of Objections
The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC--Environmental Concerns
The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO--Environmental Objections
The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU--Environmentally Unsatisfactory
The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

Category 1--Adequate
EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2--Insufficient Information
The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3–Inadequate
EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

Detailed Comments
Generic Environmental Impact Statement for License Renewal of Nuclear Plants
Supplement 29 Regarding the Pilgrim Nuclear Power Station
Draft Report for Comment

Comments related to the assessment of environmental impact from the entrainment of fish and other aquatic organisms

1. Larval transport studies were conducted in 2000, 2002, and 2004 for the purpose of comparing the percentage of winter flounder moving by Pilgrim Station to that which is entrained through Pilgrim Station's cooling system. Page 4-12 of the DSEIS presents 2004 data that indicates a 20 percent entrainment rate of stage 4 winter flounder for one survey and less than 1 percent in another survey. The DSEIS indicates that the authors of the studies "emphasized that the higher rate may have been a result of some methodological difficulties such as lost sampling gear, resulting in no sample collection from several survey locations." We note that the DSEIS does not appear to include data to support these conclusions and we recommend that an expanded explanation of the higher entrainment rate be provided in the FSEIS.

2. The DSEIS (DSEIS page 4-13) discusses the 2000 and 2002 larval transport data and adds that these "reports state that the periodic high entrainment rates observed for stages 3 and 4 larvae were likely due to difficulties in collecting the stages 3 and 4 larvae, as these larval stages generally are associated with the bottom sediments." It is our understanding that stage 3 winter flounder are found in the water column. In addition, one of the two surveys in 2004 shows a stage 4 larval entrainment rate of 20 percent. We recommend that the discussion in the FSEIS reflect the entire data set.

3. Section 4.1.1.4 of the DSEIS "concludes that the impact of entrainment on marine aquatic species other than the winter flounder population would be minor." However, it does not appear that this conclusion is fully supported in the DSEIS and EPA encourages a closer evaluation of measures to mitigate the adverse impacts of the once-through cooling system. Without effective mitigation measures to reduce entrainment, several fish species will be adversely affected. The DSEIS (DSEIS page E-105) acknowledges this impact by indicating that the continued operation of the Pilgrim Station cooling water system would have a "substantial adverse effect on EFH for 7 species" in the vicinity of Pilgrim Station.

4. Based on the information presented, and given the three tiered NRC classification system (i.e., Small, Moderate, Large), we agree with NRC's conclusion in Section 4.1.1.4 of the DSEIS, Summary of Entrainment Impacts, that the "continued operation of the PNPS would have a MODERATE impact on the local winter flounder population due to entrainment over the course of the license renewal term" and "a SMALL to MODERATE impact on the overall Gulf of Maine winter flounder stock as well as on all other marine aquatic resources due to entrainment." These conclusions about the level of impact appear justified by the entrainment data collected to date. We recommend that the FSEIS include a more comprehensive evaluation of the effectiveness and engineering

feasibility of measures to mitigate this entrainment impact, including retrofitting the once-through cooling water system with closed-cycle cooling technology.

Comments related to the assessment of environmental impact from the impingement of fish and other aquatic organisms

1. Section 4.1.2.1 of the DSEIS explains that 97% of the over 300,000 fish impinged during 2005 were Atlantic menhaden and that their survival was low (18 and 27%). In addition, there were 19 impingement events (>20 fish/hr) in 2005 which consisted primarily of Atlantic menhaden and Atlantic silversides. Even though the DSEIS acknowledges that "menhaden is one of the most commercially important fish species along the Atlantic Coast" (DSEIS page 2-37), there is little discussion regarding the impact of the impingement losses in Section 4.1.2.2 other than relying on ENSR reports and general statements such as "[t]he Atlantic menhaden stock is considered to be healthy with stable stock size and high biomass." Furthermore, although the DSEIS recognizes that "due to the lack of recent information describing the status of several local populations, it is difficult to quantify impingement impacts," it concludes that "impacts on marine aquatic species other than the Jones River population of rainbow smelt would be minor." EPA recommends that the FSEIS expand on this discussion of impingement impacts and more fully explain the basis for the conclusion that the impacts would be minor.

EPA agrees with the final conclusion in Section 4.1.2.3 of the DSEIS that the "continued operation of PNPS would have a MODERATE impact on the Jones River population of rainbow smelt due to impingement over the course of the license renewal term" and "SMALL to MODERATE impacts on other marine aquatic resources due to impingement." EPA recommends that the FSEIS evaluate further mitigation options for these impingement impacts.

2. EPA's scoping comments noted that the majority of rainbow smelt impinged at Pilgrim Station are believed to have originated from the nearby Jones River population and that without quantification of the size of that population it is not possible to fully assess the relative impact of Pilgrim Station's operations on rainbow smelt. The DSEIS (DSEIS page 4-27) indicates that "considerable uncertainty exists regarding potential impacts to rainbow smelt populations." The DSEIS discusses mitigation measures that could be implemented to reduce impingement event impacts at Pilgrim Station (DSEIS page 4-36) with what appears to be limited analysis of whether they would be effective and to what degree they could be expected to reduce impacts. EPA recommends that the FSEIS expand on that analysis.

3. We also note the discussion in the DSEIS at page 4-27 which states, "Although the loss of winter flounder juveniles and adults through impingement may be contributing to population declines, the level of impact is considered to be minimal when compared to the potential entrainment impacts." We suggest that this comparison is inappropriate and that instead of comparing the two types of impact (entrainment and impingement) that

may contribute to population declines, they both be considered together in the cumulative impact discussion.

Mitigation Measures

Automated Chlorine Monitoring System

The DSEIS (DSEIS page 4-35) lists an automated chlorine monitoring and warning system for the service water and/or condenser cooling water systems as a means to possibly mitigate for a portion of the potential impacts of the continued operation of Pilgrim Station. EPA recommends that improvements to the screenwash system be included in this discussion because chlorine exceedences occurred when there were problems with the screenwash dechlorination system. EPA also recommends that the FSEIS include an evaluation of the potential for reduced impacts associated with the installation of an automated chlorine monitoring system that includes a malfunction notification component.

Light

On page 4-35, the DSEIS indicates that "ENSR (2000) determined that, of the behavioral barriers evaluated, light barriers would be the most effective as several studies have shown that some fish species are attracted to light." This statement should be clarified since an effective barrier would typically repel, not attract, fish.

Cooling Water Bypass Flow

EPA does not believe that the cooling water bypass flow mitigation measure discussed in the DSEIS (DSEIS page 4-37) should be presented as a measure to mitigate for impingement and entrainment impacts since the intake flow at the CWIS remains unchanged.

Winter Flounder Stocking Program

The DSEIS at page 4-38 indicates that NRC staff have not found that the pilot flounder stocking "has substantially offset impacts from continued operation of PNPS to the local winter flounder population." The DSEIS also does not provide any new information or evidence to suggest that hatchery fish can persist in the environment and recruit to the adult population. Thus, the DSEIS appears to lack support for the assertion that if the current winter flounder stocking program is expanded, that it "may have a beneficial impact" on the local population (DSEIS page 4-38). If the continuance or expansion of the stocking program remains a reasonably foreseeable option for Pilgrim Station, we recommend that the FSEIS more fully explore whether stocked fish survive to reproduce and the potential impacts of hatchery-reared fish on the native population.

Fish Return System

The DSEIS (DSEIS page 4-25) indicates that a reimpingement study during the 80's was never completed. Also, the DSEIS (DSEIS page 4-37) lists moving the fish return sluiceway discharge point as a mitigation measure to avoid reimpingement. We recommend that this section of the FSEIS be expanded to include a discussion of the effectiveness of physical and operational modifications to the fish return system including more frequent or continual screen rotation.

Alternate Cooling Water Intake Technology

The evaluation of alternative mitigation measures and cooling water intake structure technologies in the DSEIS (DSEIS pages 4-34 through 4-38) is limited to a listing of various measures. We recommend that this analysis evaluate the benefits of such systems as well as their engineering feasibility and associated adverse impacts, if any.

The DSEIS analysis of closed-cycle cooling in Chapter 8.0 (the environmental impacts of alternatives to license renewal) considers the impacts of closed-cycle cooling associated with the construction of a new nuclear generating station at a greenfield site. In addition to considerations of closed-cycle cooling at a greenfield site, EPA recommends that the analysis of alternatives be expanded to include an evaluation of a retrofit of the existing Pilgrim Station facility to closed-cycle cooling.

Thermal Plume from operation

EPA's scoping comments requested an update of the analyses of thermal plume impacts in light of current information and it appears that the DSEIS only provides a summary of existing data from 1995 and 2000 reports. EPA recommends that the FSEIS provide more recent data if they are available.

Also, EPA's scoping comments suggested that the DSEIS should include the consideration of a biological surveillance program to address impacts to fish. This measure does not appear to be analyzed in the DSEIS and EPA continues to recommend that this impact minimization option be more fully explored in the FSEIS.

Dredging

EPA's scoping comments asked that the DSEIS contain a discussion of future dredging needs for the facility. The DSEIS at page 4-69 explains that the applicant doesn't plan to dredge. However, the DSEIS at page E-63 explains that dredging occurred in 1982 and 1990. While the applicant may have no plans to dredge at this point in time, EPA recommends that the FSEIS reflect that dredging of portions of the facility over the relicensing term may be likely given the past dredging history of the facility.