UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
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August 23, 2005

OFFICE OF THE
REGIONAL ADMINISTRATOR

Pao-Tsin Kuo, Program Director
License Renewal and Environmental Impacts Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Mail Stop T6-D59
Washington, DC 20555-0001

Re: Final Supplement 22 to the Generic Environmental Impact Statement (FSEIS) for License Renewal of Nuclear Plants at the Millstone Power Station, Units 2 and 3 CEQ # 20050312

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) Final Supplement 22 to the Generic Environmental Impact Statement (FSEIS) for relicensing of Units 2 and 3 of the Millstone Nuclear Power Station in Waterford, Connecticut.

As described in the FSEIS, Dominion Nuclear Connecticut, Inc. (Dominion) has submitted an application to NRC for renewal of the operating licenses for an additional 20 years. The current operating licenses expire in 2015 for Unit 2 and 2025 for Unit 3. The FSEIS was prepared to provide site specific information to supplement NRC's 1996 Generic EIS for License Renewal of Nuclear Plants. The FSEIS contains the NRC staff's recommendation that the adverse environmental effects of license renewal at Millstone are not so great that preserving the option of license renewal would be unreasonable.

EPA's comments on the DSEIS earlier this year highlighted areas where we believed additional information was necessary to more fully describe the impacts of the Millstone facility including the environmental impacts of operation, such as entrainment and impingement of fish and shellfish, impacts from heat shock, and cumulative impacts. The attachment to this letter provides our comments on the FSEIS. We continue to encourage the NRC to address these issues. Our comments on the FSEIS are based solely on our review of the information in the NRC's FSEIS from the standpoint of what is required by NEPA and are not intended to address the requirements of the Clean Water Act NPDES permit that is required for the facility.

Thank you for the opportunity to comment on the FSEIS. My staff remains available to help the NRC respond to the issues discussed in this letter. Please feel free to contact me or 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

cc:

Gina McCarthy, Commissioner, Connecticut Department of Environmental Protection

Additional Detailed Comments
Final Supplement 22 to the Generic Environmental Impact Statement (FSEIS)
for License Renewal of Nuclear Plants at the Millstone Power Station, Units 2 and 3

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

Pg. 4-21. The FSEIS reiterates the conclusion in the DSEIS that impacts to the Niantic River winter flounder population from entrainment are "MODERATE." According to the FSEIS (pg.1-4), "MODERATE" is defined as "Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource." Therefore, the NRC has made the determination that the environmental effects from Millstone have noticeably altered the Niantic River winter flounder population. With respect to the stability of the resource, the FSEIS states (pg. 4-22) that, "Regardless of the cause, the Niantic River winter flounder spawning population appears to have reached critically low levels and to be highly vulnerable to collapse." It is unclear, given NRC's own impact criteria and the conclusions made in the FSEIS, why the impact is not considered "LARGE". The FSEIS cites a variety of other stressors that may be contributing to this dramatic decline, including fishing mortality, increasing water temperatures, and increased predation. EPA readily agrees that multiple stressors may be involved, as we stated in our comments on the DSEIS. However, the entrainment of winter flounder larvae at Millstone (e.g., 492 million in 1992) is clearly one of the contributing stressors. Moreover, when considered together with the other stressors, Millstone entrainment seems a significant cumulative impact.

As stated in our comments on the DSEIS, EPA believes that the NRC is obligated under NEPA to fully evaluate and disclose the potential environmental impacts from this operation, as well as to identify possible operational and technological alternatives that could effectively mitigate for the loss of aquatic resources. The FSEIS states that the NRC staff considered possible mitigation measures that would allow for the continued operation of Millstone Units 2 and 3 (pg. 4-22), but the FSEIS does not discuss possible benefits or detriments of potential mitigation options or what measures were considered. Ultimately, the FSEIS does not propose that any mitigation be required. The absence of a discussion of potential mitigation measures makes it difficult to understand if project impacts could be reduced and what mitigation measures are available and might be appropriate to address the anticipated impacts.

We also think that the FSEIS contains inconsistent and unsupported statements regarding requirements that may come out of Connecticut Department of Environmental Protection's NPDES permit process. First, the NRC repeatedly claims to have no authoritative role in discharge permits, or compliance with the Clean Water Act, and therefore a limited role in addressing issues related to entrainment and impingement by Millstone. Second, the FSEIS states, "Any mitigation measures imposed by the state of Connecticut as a result of ongoing NPDES permit review would be expected to reduce entrainment losses to winter flounder and lessen the impact of plant operations on the Niantic River winter flounder." (FSEIS, pg. 4-22).

The FSEIS also, however, states, "The NRC, however, recommends that before any significant mitigation is implemented [as a result of the NPDES process] at Millstone to lessen the impact on winter flounder, a thorough understanding of the causes for the unusually poor recruitment of juveniles is necessary." EPA believes it is inconsistent and inappropriate for the NRC on the one hand to argue that it must defer addressing entrainment to the NPDES permit process and to assert that permit measures will reduce harmful entrainment impacts, and then, on the other hand, to offer the recommendation that no mitigation be implemented until the causes of poor recruitment are further studied, all while deciding to issue a new long-term license to the facility for continued plant operations in advance of the completion of such studies. In light of the critically low level of the Niantic River winter flounder stock and the fact that poor recruitment may result from many causes whose exact contribution may never be fully understood, we remain concerned that recommendations in the FSEIS might ensure that steps that would help promote a recovery never take place. Clearly, winter flounder would benefit by immediate reductions in entrainment mortality at Millstone.

Pg 4-21. The FSEIS states that the NRC staff concludes that the impact of entrainment on species other than winter flounder is not detectable. While the NRC may have been unable to conclude that entrainment impacts have caused a population-level shift that is a direct result of plant operations, the fact remains that significant numbers of fish and other aquatic organisms are killed annually due to normal operations. It is EPA's opinion that under NEPA, as well as the Clean Water Act, those losses represent adverse environmental impacts and they are clearly detectable. We continue to believe, therefore, that a range of mitigation alternatives to minimize such impacts should have been identified and evaluated in the FSEIS, and that appropriate mitigation be required in the Record of Decision (ROD).

Pg. 4-14. Table 4-4 in the FSEIS presents larva entrainment data for select species of fish and lobster. EPA expressed concern in comments on the DSEIS that it was unclear if the table represented actual entrainment totals. The FSEIS does provide some clarification. However, we note that many of the figures in Table 4-4 have changed. There appears to be a general reduction in water sample volumes - some significant - but with only minor changes in entrainment numbers. For example, in the DSEIS, entrainment of sand lance in 1994 was estimated to be 65 million in 1 819 billion cubic meters of water sampled. The FSEIS indicates that, for the same year, 58 million sand lance were entrained in only 899 million gallons sampled, roughly half the original volume. Similarly significant changes for the other species listed were also included, with the exception of winter flounder. The values for winter flounder remained virtually the same for all years listed. We could find no discussion as to why these values had changed, or if they were considered during NRC's impact analysis. Also, we wonder why the volume values didn't change for winter flounder. Table 4-5 exhibits similar changes, but not of the same magnitude. We recommend that this be clarified in the ROD.

EPA's comments on the DSEIS included a request for NRC to more fully discuss the impacts of entrainment on forage species. The impact of reduced forage may be difficult to quantify, but it is reasonable to expect that the loss of forage biomass shifts predation to other species, thereby

increasing pressure on those species. There need not be a population-level decrease on a particular forage species to cause a localized increase in predation-related stress on other species. Under the "Cumulative Impacts" section of the FSEIS (4.8.1), predator-prey interactions are listed as likely contributing stressors to the continuing low winter flounder population levels. It would have been helpful if the analysis included a discussion of how predator-prey interactions might be altered in the waters around Millstone due to the loss of prey species from entrainment and impingement.

Comments related to NRC's assessment of environmental impact from the impingement of fish and other aquatic organisms.

Pg. 2-7. The FSEIS includes the intake velocities for Units 2 and 3, as we requested in our written comments on the DSEIS. This information reveals that the intake velocities for Unit 2 (1.5 feet per second) and Unit 3 (1.0 foot per second) are two to three times greater than the industry standard of 0.5 foot per second. Intake velocities correspond directly with rates of entrainment and impingement. This may partially explain the high annual impingement rates for a number of species, including winter flounder, which have exceeded 23,500 fish in one year according to Table 4-6 of the FSEIS.

Pg. 2-7. In our comments on the DSEIS, we recommended that the FSEIS include information on, among other things, the water pressure(s) of the spray wash system used to remove fish and debris from the traveling screens. The FSEIS does include this information, and it reveals another aspect of the plant's cooling water intake system that could be modified to improve survival of impinged fish and other aquatic organisms. According to the FSEIS, the spray-wash pressure for Unit 2 is 85 pounds per square inch (psi). This pressure is clearly intended to remove debris, and can injure or kill fish impinged on the traveling screens. Unit 3, on the other hand, has a low pressure wash (10 psi) designed to safely remove fish from the screens before the higher pressure wash removes debris. According to the FSEIS, impingement survival studies conducted at Millstone indicate that the survival of demersal species, which presumably include winter flounder, in Unit 3's cooling water intake structure is significantly higher (67% vs. 27%) than fish impinged in Unit 2 during warm water periods (Table 4-8). The installation of a low pressure wash, a fairly minor modification, would likely reduce impingement mortality in Unit 2 for vulnerable species such as winter flounder. We recommend that this measure be required in the ROD.

Pg. 4-27. Impingement survival data collected during periods of warm water temperatures (60.8°F - 71.6°F) was absent in the DSEIS, which focused instead on cool and cold water periods when winter flounder survival rates were reported to be 86% - 94%. EPA requested that data collected during warm temperatures be included in the FSEIS since this represents the period when many juvenile fish, including winter flounder, are likely to be most abundant in the shallows around the intake structures, and most vulnerable to impingement. The FSEIS includes survival rates for the warm temperature category in Table 4-8. Those data reveal that while survival rates for demersal species (i.e., bottom-oriented) are reported to be 86% for Unit 2 during periods of

cold water (38.3°F - 44.6°F), the rate drops to 27% during periods of warm water. Unfortunately, no discussion of these low survival rates is included in the FSEIS. In addition, Table 4-9 suggests that impingement survival for winter flounder is between 94% - 100%, and is based on the same data collected for the survival study presented in Table 4-8. These tables are confusing and appear to contradict each other, but the discussion in the FSEIS focuses only on the reported high survival rates of winter flounder. It is very important to fully understand the survival rates of species vulnerable to impingement at times when they are most likely to be present. Based on the information provided in the DSEIS and FSEIS, this issue is still in question, at least for winter flounder and other demersal species.

Pg. 4-29. The FSEIS states, as did the DSEIS, that the measures in place at Millstone Units 2 and 3 provide mitigation for impacts related to impingement, and no new measures are warranted. As with entrainment mortality, the loss of fish and other aquatic organisms from impingement represents an adverse environmental impact. Millstone's normal operation of its cooling water intake system has been documented to impinge tens of thousands of fish and other aquatic organisms each year, many of which likely die, based on survival studies completed at Millstone. While some components of Millstone's cooling water intake system have been updated, others have not. As we stated in our previous comments, we believe that a discussion of appropriate mitigation alternatives to reduce impingement and increase the survival of organisms impinged is warranted.

Comments related to NRC's assessment of environmental impact from "Heat Shock"

EPA's comments on the DSEIS requested a more comprehensive analysis of sublethal effects associated with the thermal plume. The FSEIS includes a brief discussion about the NRC's conclusion that the thermal plume is not likely to impede fish migration, and provides figures that illustrate the thermal plume under various tidal scenarios, as we had requested. The FSEIS does not include any discussion pertaining to the plume's capacity to 1) preclude the use of affected areas by temperature-sensitive species; 2) attract and expose organisms to areas of elevated temperature during spawning periods; and 3) expose eggs and larvae to water temperatures well above levels that are typical under ambient conditions. While these impacts may be difficult to quantify, they should have been included in the FSEIS as potential thermal impacts to fish and other aquatic organisms in the vicinity of Niantic Bay and Jordan Cove in light of the fact that the FSEIS lists increasing water temperatures within Long Island Sound as a potential contributing stressor to the Niantic River winter flounder population.

Comments related to NRC's assessment of cumulative environmental impacts

The FSEIS (pg. 4-64) identifies fishing mortality, entrainment from Millstone water withdrawals, environmental changes associated with regional increases in water temperature, and predator-prey interactions as the primary stressors contributing to a continuing low winter flounder population levels in the Niantic River area. The FSEIS also includes urbanization, runoff, and industrial activities as other possible stressors to winter flounder. However, conspicuously absent is

impingement mortality, which, according to the FSEIS, has been as high as 23,544 fish in a single year. Given the present population of Niantic River winter flounder, which is characterized by the FSEIS as "critically low" and "highly vulnerable to collapse," any stressor that contributes directly to the loss of winter flounder in this area should have been included under a discussion of cumulative impacts.