

JAN 06 1988

Docket No. 50-336

Mr. Edward J. Mroczka
Senior Vice President
Nuclear Engineering and Operations
Northeast Nuclear Energy Company
P. O. Box 270
Hartford, Connecticut 06141-0270

Dear Mr. Mroczka:

Subject: Extension of Facility Operating License for Millstone 2 (TAC #64245)

Enclosed is a copy of the Environmental Assessment associated with your December 22, 1986 amendment application. The proposed amendment would extend the license expiration date for Millstone Unit 2 from December 11, 2010 to July 31, 2015.

Also enclosed is a copy of the Notice of Issuance of Environmental Assessment and Finding of No Significant Impact which was published in the Federal Register.

Sincerely,

"ORIGINAL SIGNED BY?"

David H. Jaffe, Project Manager
Project Directorate I-4
Division of Reactor Projects I/II

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

ENVIRONMENTAL ASSESSMENT
BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATING TO THE CHANGE IN EXPIRATION DATE OF
FACILITY OPERATING LICENSE NO. DPR-65
NORTHEAST NUCLEAR ENERGY COMPANY, ET AL
MILLSTONE NUCLEAR POWER STATION, UNIT 2
DOCKET NO. 50-336
DATED: JAN 06 1988

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1.0 INTRODUCTION

The United States Nuclear Regulatory Commission (the staff) is considering the issuance of a proposed amendment which would extend the expiration date of the facility operating license for Millstone Unit 2 from December 11, 2010 to July 31, 2015. Millstone Unit 2 is operated by Northeast Nuclear Energy Company, et al. (the licensee) and is located in New London County, Connecticut.

2.0. IDENTIFICATION OF THE PROPOSED ACTION

The currently licensed term for Millstone Unit 2 is 40 years commencing with issuance of the construction permit (December 11, 1970). Accounting for the time that was required for plant construction, this represents an effective operating license term of approximately 35 years. The licensee's application dated December 22, 1986 requests an extension of the expiration date of the operating license to July 31, 2015. Therefore, the 40-year operating term would start with the issuance of the operating license and not the construction permit.

3.0. THE NEED FOR THE PROPOSED ACTION

The granting of the proposed license amendment would allow the licensee to operate Millstone Unit 2, for approximately five additional years beyond the currently approved expiration date. Without issuance of the proposed license amendment, Millstone Unit 2 would be shutdown after the currently approved license duration.

4.0 ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION

In June 1973, the United States Atomic Energy Commission issued the "Final Environmental Statement Related to Continuation of Construction of Unit 2 and Operation of Units 1 and 2, Millstone Nuclear Power Station." Subsequently, in December 1984 the NRC issued the "Final Environmental Statement related to the Operation of Millstone Nuclear Power Station Unit No. 3," NUREG-1064. The Unit 3 Final Environmental Statement (FES) is significant in that, for some environmental impacts, the operation of Millstone Units 1, 2 and 3 were considered together within the time-frame of analysis for Unit 3 (licensed through November 25, 2025.) The staff has reviewed the Millstone Unit 2 and 3 FESs, and additional information requested from the licensee, to determine the environmental impact of operation of Millstone Unit 2 for approximately five additional years.

4.1 Radiological Impacts

The staff has considered potential radiological impacts for the general public in residence in the vicinity of the Millstone Nuclear Power Station; these impacts include potential accidents and normal radiological releases. In addition the staff has considered the impacts of radiation exposure to workers at Millstone Unit 2. Finally the impact on the uranium fuel cycle and the transportation of fuel and waste has been considered. The above impacts are summarized in Sections 4.1.1 through 4.1.4 herein.

4.1.1 General Public

In the FES, dated December 1984, the staff calculated the dose commitment to the population residing around Millstone Unit 2 to assess the impacts on people from radioactive material released as part of the normal operation of the plant. The annual dose commitment was defined to be the dose that would be received over a 50 year period following the intake of radioactivity for one year under the conditions that would exist 20 years after the plant began operation. The 20 year period was chosen as representing the midpoint of plant life and was incorporated into the dose model by allowing for buildup of long life radionuclides in the soil. The buildup factor mainly affects the estimated doses for radionuclides with half-lives greater than a few years that are ingested by humans. Table D-6b of the FES lists the estimated doses associated with the normal operations of Millstone Units 1, 2 and 3. These doses are below the annual dose design objectives of 10 CFR 50, Appendix I, Rule Making 50-2. Thus, the staff concludes that doses to members of the public would remain below the dose design objectives of 10 CFR 50, Appendix I and would not be significant.

The staff has assessed the public risks from reactor accidents per year of operation at other reactors of comparable design and power level. In all cases, the estimated risks of early fatalities and latent cancer fatalities per year of reactor operation have been small compared to the risks of many non-reactor type of accidents to which the public is typically exposed, and the natural incidence of fatal cancers. The annual risks associated with reactor accidents did not increase with longer periods of operation of the reactor. If similar risks were estimated for Millstone Unit 2, we would expect a similar conclusion. Further, as stated in the FES, dated June 1973, the integrated exposure to the population within a 50-mile radius of Millstone Unit 2 from each postulated accident would be orders of magnitude smaller than that from naturally occurring background radiation, (i.e., about 0.1 Rem/year). When considered with the probability of occurrence, the annual potential radiation exposure from all the postulated accidents is a small fraction of exposure from natural background radiation.

The staff concludes that the proposed additional years of operation would not increase the annual public risk from reactor accidents.

In regard to potential changes in the exclusion area, the low population zone and distance to population centers, these were evaluated for the Millstone site in the FES, dated December 1984. The site was found to be acceptable for the 40 year operation license for Millstone Unit 3. Since the 40 year operation license for Millstone Unit 3 will go beyond the proposed operating life of Millstone Unit 2, the analysis in the FES, dated December 1984, would also bound the 40 year license for Millstone Unit 2 in regard to low population zone, and distance to population centers.

4.1.2 Uranium Fuel Cycle

In addition to the impacts associated with the operation of the reactor, there are impacts associated with the uranium fuel cycle. The uranium fuel cycle consists of those facilities (e.g., uranium mills, fuel fabrication plants,

etc.) that are necessary to support the operation of the reactor. The FES, dated December 1984, described the impacts associated with the uranium fuel cycle. These impacts were based on 30 years of operation of a model light water reactor. The fuel requirements for the model reactor were assumed to be one initial core load and 29 annual refuelings (approximately one-third of the core is replaced during each refueling). In considering the annual fuel requirements for 40 years for a model reactor, fuel use is averaged over a 40 year operating life (one initial core and 39 refuelings of approximately one-third core each). This averaging results in a slight reduction in annual fuel use for 40 years of operation, as compared to the annual fuel requirement averaged over a 30 year operating life. The net result is an approximately 1.5 percent reduction in the annual fuel requirements for the model reactor due to averaging the initial core load over 40 years, instead of 30 years. This small reduction in fuel requirements would not lead to significant changes in the annual impacts associated with the uranium fuel cycle.

4.1.3 Occupational Exposures

The staff has evaluated the licensee's dose assessment for the years 2010 to 2015 (the additional years during which Millstone Unit No. 2 would operate), and compared it with current Millstone Unit No. 2 and overall industry occupational dose experience.

The average yearly occupational exposure for Millstone Unit No. 2 over the most recent five-year period, covering 1982-1986, was 1178 person-rems. This is more than twice the average yearly exposure of 500 person-rems per unit for U.S. PWRs over the same five-year period. A major contributor to the high annual exposures at Millstone Unit No. 2 in recent years has been steam generator inspection and repair projects. In 1986, the licensee established a new Exposure Reduction Initiative Program. Part of this program involved the establishment of a three-year average exposure goal for Millstone Unit No. 2 of 525 person-rems/year. The licensee expects the three-year average exposure for Millstone Unit No. 2 to reach this goal by 1990. The licensee hopes to accomplish this through continued implementation of ALARA measures, as well as through the achievement of the short- and long-term exposure reduction initiatives which are also part of this new Exposure Reduction Initiative Program. The program's thirteen short-term initiatives have a scheduled achievement date of 1987-1988. These initiatives include increased ALARA awareness, optimization of worker efficiency, equipment decontamination, installation of a permanent neutron shield, a snubber reduction program, and a cobalt reduction program. The seven long-term initiatives in this program have a completion date in the early 1990's. These ALARA initiatives include full system (including fuel) decontamination, improved primary and secondary side chemistry controls, longer fuel cycles,

and use of advanced robotics techniques to minimize worker time spent in radiation areas. By reducing the annual occupational exposure at Millstone Unit No. 2 through the use of these ALARA measures, the licensee estimates that the additional dose contribution from operating the extra few years beyond the existing license will be less than 2000 person-rem. This is roughly equivalent to the five-year dose from a typical U.S. PWR.

Additional occupational exposures will result from decommissioning of Millstone Unit No. 2, although these doses will be incurred with or without the license extension period. Any increases in corrosion product buildup during the period of extension will be compensated for by improved chemistry controls and other ALARA measures to actually lower primary side dose rates with time. Consequently, the extended operating time should have no measurable adverse effect on decommissioning dose requirements.

Spent fuel will be stored in the spent fuel pool (previously evaluated and approved by the staff for radiological environmental consequences) in lieu of shipment offsite until alternate storage facilities are available (i.e., Federal Waste Repository). On January 15, 1986, the staff approved the licensee's plans to install high density racks in the spent fuel storage pool. These racks have since been installed. In order to further increase the storage capacity of the Millstone Unit No. 2 spent fuel storage pool, the licensee requested permission to allow storage of consolidated spent fuel in the Unit No. 2 spent fuel storage pool. On June 2, 1987, the staff approved the licensee's plans to allow storage of five storage canisters containing consolidated fuel in the spent fuel storage pool. The staff will evaluate the licensee's plan to store additional canisters containing consolidated fuel at a later date. The implementation of fuel consolidation at Millstone Unit No. 2, total utilization of the existing spent fuel racks, and improvements in fuel design for longer cycle life should ensure that Millstone Unit No. 2 will have sufficient "in pool" storage for all refueling discharges and maintain full core reserve space through the year 2015.

On the basis of the staff's review of the licensee's ALARA program and information presented at the meeting held with the licensee, the staff feels that the licensee is making significant progress towards establishing an effective ALARA program at Millstone Unit No. 2. The licensee's new Exposure Reduction Initiative Program, including the three-year average exposure goal, is in compliance with the guidelines of Regulatory Guide 8.8 for ensuring that occupational radiation exposures will be maintained ALARA and in compliance with 10 CFR Part 20 requirements. The licensee's recent attempts to identify the root causes of the plant's equipment/component problems should result in a reduction in the maintenance related exposures at Millstone Unit No. 2. For these reasons, the staff finds the licensee's dose assessment to be acceptable. The licensee, however, must continue to implement both their short- and long-term initiatives within the allotted time schedule. The licensee must also make an increased effort to realize their exposure goals for Millstone Unit No. 2 by 1990. The staff will follow the progress of the ALARA program at Millstone Unit No. 2 to ensure that improvements in this program and in the annual collective exposures continue to be made.

4.1.4 Environmental Impacts -Transportation Of Fuel And Waste

The staff has reviewed the environmental impacts attributable to the transportation of fuel and waste to and from the Millstone site including information submitted by the licensee's letter dated April 3, 1987. With respect to the normal conditions of transport and possible accidents in transport, the staff concludes that the environmental impacts are bounded by those identified in Table S-4, "Environmental Impact of Transportation of Fuel and Waste To and From One Light Water-Cooled Nuclear Power Reactor" of 10 CFR Part 51.52. The bases for this conclusion are that: 1) Table S-4 is based on an annual refueling and an assumption of 60 spent-fuel shipments per reactor year. At the present time, the licensee projects a total of 28 fuel cycles for Millstone Unit 2 over a full 40 years of operation. Reducing the number of fuel shipments will reduce the overall impacts related to population exposure and accidents discussed in Table S-4. 2) Table S-4 represents the contribution of such transportation to annual radiation dose per reactor year to exposed transportation workers and to the general public. The licensee projects that spent fuel may slightly exceed the fuel enrichment and average fuel irradiation levels that are specified in 10 CFR 51.52(a)(2) and (3) as the bases for Table S-4. The radiation levels of transport fuel casks are limited by the Department of Transportation and are not dependent on fuel enrichment and/or irradiation levels. Therefore, the estimated doses to exposed individuals per reactor year will not increase over that specified in Table S-4.

The annual radiation dose to individuals would not be changed by the extended period of operation. Although some integral risk with respect to normal conditions of transportation and possible accidents in transport would be attributed to the additional years of operation, the integral risk would not be significant because the annual risk for such transportation is small.

4.2 Non-Radiological Impacts

The staff has reevaluated the non-radiological impacts associated with operation of Millstone Unit 2 to include the approximately five additional years of operation associated with the change in expiration date of the Operating License. Many of the non-radiological impacts have already been addressed in that the Unit 3 FES includes the impact of Unit 2 operation for a time frame in excess of the currently considered five year period. Other impacts such as water and land use are judged to be minor especially when compared to the impacts associated with construction of a replacement power production capability. We conclude that the non-radiological impacts associated with the change in the Operating License expiration date are acceptable.

5.0 ALTERNATIVES TO THE PROPOSED ACTION

The principal alternative to issuance of the proposed license extensions would be to deny the application. In this case, Millstone Unit 2 would shut down upon expiration of the present operating license.

In Chapter XI of the June 1973 FES, a cost-benefit analysis is presented for Millstone Unit 2. Included in the analysis is comparison among various options for producing an equivalent electrical power capacity. Even considering significant changes in the economics of the alternatives, operation of Millstone Unit 2 in its present plant configuration for an additional five years would only require incremental yearly costs. These costs would be substantially less than the purchase of replacement power or the installation of new electrical generating capacity. Moreover, the overall cost per year of the facility would decrease since the large initial capital outlay would be averaged over a greater number of years. In summary, the cost-benefit advantage of Millstone Unit 2 compared to alternative electrical power generating capacity improves with the extended plant lifetime.

6.0 ALTERNATIVE USE OF RESOURCES

This action does not involve the use of resources not previously considered in connection with the June 1973 FES.

7.0 AGENCIES AND PERSONS CONSULTED

The Commission's staff reviewed the licensee's request and did not consult other agencies or persons.

8.0 BASIS AND CONCLUSIONS FOR NOT PREPARING AN ENVIRONMENTAL IMPACT STATEMENT

The Commission has determined not to prepare an environmental impact statement for the proposed action. The staff has reviewed the proposed license amendment relative to the requirements set forth in 10 CFR Part 51. Based on this assessment, the staff concludes that there are no significant radiological or non-radiological impacts associated with the proposed action and will not change any conclusions reached by the Commission in the FES. Therefore, pursuant to 10 CFR 51.31, an environmental impact statement need not be prepared for this action. Based upon this environmental assessment, the Commission concludes that the proposed action will not have a significant effect on the quality of the human environment.

UNITED STATES NUCLEAR REGULATORY COMMISSIONNORTHEAST NUCLEAR ENERGY COMPANY, et. alMILLSTONE NUCLEAR POWER STATION, UNIT 2DOCKETS NO. 50-336NOTICE OF ISSUANCE OF ENVIRONMENTAL ASSESSMENTAND FINDING OF NO SIGNIFICANT IMPACT

The U. S. Nuclear Regulatory Commission (the Commission) is considering issuance of an amendment to Facility Operating License No. DPR-65, issued to Northeast Nuclear Energy Company, et. al (the licensee), for operation of Millstone Nuclear Power Station, Unit 2, located in New London County, Connecticut.

Identification Of Proposed Action:

The amendment would consist of a change to the operating license to extend the expiration dates of the operating license for Millstone Nuclear Power Station, Units 2, from December 11, 2010 to July 31, 2015. The proposed license amendment is responsive to the licensee's application dated December 22, 1986. The Commission's staff has prepared an Environmental Assessment of the proposed action, "Environmental Assessment by the Office of Nuclear Reactor Regulation Relating to the Change in Expiration Date of Facility Operating License No. DPR-65, Northeast Nuclear Energy Company, et. al, Millstone Nuclear Power Station, Unit No. 2, Dockets No. 50-336, dated January 6, 1988.

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Summary Of Environmental Assessment:

The Commission's staff has reviewed the potential environmental impact of the proposed change in the expiration date of the Operating License for Millstone Nuclear Power Station, Unit 2. This evaluation considered the previous environmental studies, including the "Final Environmental Statement Related to Continuation of Construction of Unit 2 and Operation of Units 1 and 2, Millstone Nuclear Power Station," June 1973 the Final Environmental Statement related to the operation of Millstone Nuclear Power Station Unit No. 3 NUREG-1064, December 1984, and more recent NRC policy.

Radiological Impacts:

The staff concludes that the Exclusion Area, the Low Population Zone and the nearest population center distances will likely be unchanged from those described in NUREG-1064. Since the 40 year operating license for Millstone Unit 3 will go beyond the proposed operating life of Millstone Unit 2, the analysis in the FES, dated December 1984, would also bound the 40 year license for Millstone Unit 2 in regard to low population zone, and distance to population centers.

Station radiological effluents to unrestricted areas during normal operation have been well within Commission regulation regarding as-low-as-is-reasonably-achievable (ALARA) limits, and are indicative of future releases. In addition, the proposed additional years of reactor operation do not increase the annual public risk from reactor operation.

With regard to normal plant operation, the occupational exposures for Millstone Unit 2 have been among the highest in the nuclear industry. The

licensee is addressing the problem of high occupational exposures via a number of short and long term dose reduction initiatives. The NRC staff has reviewed the licensee's initiatives and believes that these initiatives will result in a substantial reduction in occupational exposures at Millstone Unit 2.

The NRC staff concludes that radiological impacts on man, both onsite and offsite, are not significantly more severe than previously estimated in the FES and the staff's previous cost-benefit conclusions remain valid.

The environmental impacts attributable to transportation of fuel and waste to and from the Millstone Nuclear Power Station, Unit 2, with respect to normal conditions of transport and possible accidents in transport, would be bounded as set forth in Summary Table S-4 of 10 CFR Part 51.52, and the values in Table S-4 would continue to represent the contribution of transportation to the environmental costs associated with the reactor.

Non-Radiological Impacts:

The Commission has concluded that the proposed extension will not cause a significant increase in the impacts to the environment and will not change any conclusions reached by the Commission in the FES.

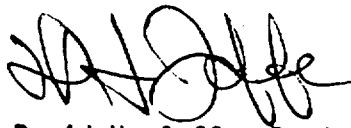
FINDING OF NO SIGNIFICANT IMPACT:

The Commission's staff has reviewed the proposed change to the expiration date of the Millstone Nuclear Power Station, Unit 2, Facility Operating License relative to the requirements set forth in 10 CFR Part 51. Based upon the environmental assessment, the staff concluded that there are no significant radiological or non-radiological impacts associated with the proposed action and that the proposed license amendment will not have a significant effect on the quality of the human environment. Therefore, the Commission has determined, pursuant to 10 CFR 51.31, not to prepare an environmental impact statement for the proposed amendment.

For further details with respect to this action, see (1) the application for amendment dated December 26 1986, (2) the Final Environmental Statement Related to Continuation of Construction of Unit 2 and Operation of Units 1 and 2, Millstone Nuclear Power Station, and June 1973, and (3) the Environmental Assessment dated January 6, 1988 . These documents are available for public inspection at the Commission's Public Document Room, 1717 H Street, Washington, D. C., 20555 and at the Waterford Public Library, 49 Rope Ferry Road, Waterford, Connecticut 06385.

Dated at Bethesda, Maryland, this 6th day January 1988.

FOR THE NUCLEAR REGULATORY COMMISSION



David H. Jaffe, Project Manager
Project Directorate I-4
Division of Reactor Projects I/II