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EPA's comments on the DES for Nine Mile Point Unit #1.

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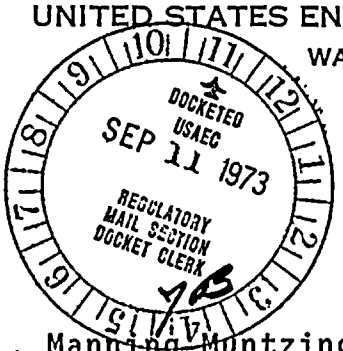

7 SEP 1973

50-220

OFFICE OF THE
ADMINISTRATOR

Mr. L. Manning Muntzing
Director of Regulation
U. S. Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. Muntzing:

The Environmental Protection Agency has reviewed the draft environmental impact statement for the Nine Mile Point Nuclear Station, Unit 1. This statement was issued in conjunction with the utility's application for conversion of its provisional operating license to a full-term license.

We concur with the AEC staff opinion that the existing monitoring program for assessing the extent of impingement and entrainment losses is inadequate. We agree with the AEC staff's recommendation that this program be substantially expanded. Because of this lack of information concerning the effects of the plant on the biota of the receiving waters, a complete assessment of the plant's environmental impact is not possible. Consequently, it is our recommendation that the final impact statement not be processed and the full-term operating license not be granted until after completion of the monitoring program and analysis of the results. In the interim, the plant should continue to operate under its provisional license.

The cooling system as now operated causes a violation of the New York State criteria for thermal discharges. We anticipate that this discharge would be in violation of a revision to Federal-State standards under the Federal Water Pollution Control Act Amendments of 1972 (FWPCA) and would, in all probability, fail to meet effluent guidelines under the FWPCA when they are promulgated. We recommend, therefore, that the applicant evaluate alternative heat dissipation systems for this facility.

The fact that actual operating experience has resulted in higher liquid releases than those calculated leads us to

question the applicability of the AEC standard model for evaluating liquid radwaste systems. The final statement should address specifically what equipment deficiencies have occurred and what corrective actions have been taken, or what commitments have been made to take such actions, which will insure that the liquid radwaste equipment will perform as designed.

After an examination of the disparity between AEC estimates of curies released and the relative percentages of critical isotopes reported in the 1971 and 1972 operating reports for the station, we question the validity of some of the basic assumptions used by the AEC in their dose calculations for this nuclear station. Use of the standard AEC dose model is acceptable only if it adequately reflects reported operational releases from the station since 1972. This discrepancy should be rectified in the final statement.

Our detailed comments on this draft statement are enclosed. In light of our review of this statement and in accordance with EPA procedure, we have classified the project as ER (Environmental Reservations) and rated the draft statement as Category 2 (Insufficient Information). We would be pleased to discuss our classification or comments with you or members of your staff.

Sincerely yours,

Rebecca W. Hammer

for Sheldon Meyers
Director
Office of Federal Activities

Enclosure

EPA# D-AEC-06112-NY

ENVIRONMENTAL PROTECTION AGENCY

Washington, D. C. 20460

September 1973

ENVIRONMENTAL IMPACT STATEMENT COMMENTS

Nine Mile Point Nuclear Station, Unit 1

TABLE OF CONTENTS

INTRODUCTION AND CONCLUSIONS

The Environmental Protection Agency (EPA) has reviewed the draft environmental impact statement for the Nine Mile Point Nuclear Station Unit I prepared by the U.S. Atomic Energy Commission (AEC) and issued on July 5, 1973. Following are our major conclusions:

1. The proposed augmented radioactive waste management system is expected to limit radioactive releases to a level that can be considered "as low as practicable."

2. Operating data from this plant lead us to question the applicability of the AEC standard model for evaluating the liquid radwaste treatment systems. The final statement should address, specifically, what equipment deficiencies have occurred and what corrective actions have been taken or are committed to, which will insure that the liquid radwaste equipment will perform as designed.

3. After an examination of the curies released and the relative percentages of critical isotopes reported in the 1971 and 1972 operating reports for the station, we question the validity of some of the basic assumptions used by the AEC in their dose calculations for this nuclear station. Use of the standard AEC dose model is acceptable only if it adequately reflects reported operational releases from the station since 1972.

4. The existing monitoring program for assessing the extent of impingement and entrainment losses is inadequate. We concur with the AEC staff's recommendation that this program be substantially expanded.

5. Owing to the lack of information concerning the effects of the plant on the biota of the receiving water, a complete assessment of the plant's environmental impact is not possible. Consequently, it is our recommendation that the final statement not be processed and the full-term operating license not be granted until after completion of the monitoring program and analysis of the results. In the interim, the plant should continue to operate under its provisional license.

6. The cooling system as presently designed will cause New York State criteria for thermal effluents to be grossly exceeded.

RADIOLOGICAL ASPECTS

Radioactive Waste Management

The radioactive waste management systems currently being utilized in the Nine Mile Point Nuclear Station Unit 1 are not representative of current practice. However, the proposed augmented radioactive waste systems include "state-of-the-art" technology and, if properly operated and maintained consistent with 10 CFR Part 50, the discharges should be "as low as practicable."

As noted on page 3-18 of the draft statement, "Operating experience to date has resulted in higher liquid releases than those calculated. The operating-maintenance report indicates that the radwaste equipment has not performed according to design." These deficiencies could be due to a variety of causes, such as a lack of component reliability causing excess leakage, or failure to achieve expected decontamination factors. On the other hand, the problems that have occurred may be peculiar to the Nine Mile Point 1 station rather than the waste treatment equipment itself, due to operational factors. In view of the currently available operating experience, we are concerned with the applicability of the AEC standard model for evaluating the liquid radwaste system. The final statement should address specifically what deficiencies have occurred and the corrective actions that have been implemented, or are committed to, which will insure that the liquid releases will be "as low as practicable."

If corrective action has already been taken, then we would encourage the utilization of operating data taken subsequent to that action to

validate the AEC standard model for the analysis to be made in the final statement.

Dose Assessment

We are concerned with the validity of using the AEC standard assumptions in the dose calculations associated with liquid releases from the station in light of the available operating data. This concern is two-fold: 1) the operating data indicate a much greater total activity released and 2) large variations are evident in the percentages of critical long-lived isotopes (isotopic mix) observed in operating data versus the AEC predicted releases. The following table illustrates the problem:

	AEC estimate of existing system releases		1971 operating data adjusted to 80% load factor		1972 operating data adjusted to 80% load factor	
Isotope	1972 % total	Ci	1971 % total	Ci	1972 % total	Ci
Cs-134	0.9	0.036	1.5	0.70	11.1	5.85
Cs-137	0.8	0.032	4.5	1.47	29.1	15.51
Mn-54	0.11	0.0044	18.4	8.45	13.6	7.01
Co-60	0.9	0.037	20.0	9.30	26.0	13.65
I-133	15.75	0.63	0.9	0.37	1.95	1.01

Accordingly, the final statement should use either extrapolations from the existing operating data for the dose calculations, or justify the use of the standard AEC model in order to present a more realistic picture of the impact of this facility.

Transportation

EPA, in its earlier reviews of the environmental impact of transportation of radioactive material, agreed with the AEC that many aspects of this problem could best be treated on a generic basis. The

generic approach has reached the point where on February 5, 1973, the AEC published for comment in the Federal Register a rulemaking proposal concerning the "Environmental Effects of Transportation of Fuel and Waste from Nuclear Power Reactors." EPA commented on the proposed rulemaking by a letter to the AEC, dated March 22, 1973, and by an appearance at the public hearing on April 2, 1973.

Until such time as a generic rule is established, the EPA is continuing to assess the adequacy of the quantitative estimates of environmental radiation impact resulting from transportation of radioactive materials provided in environmental statements. The estimates provided for this station are deemed adequate based on currently available information.

Reactor Accidents

EPA has examined the AEC analysis of accidents and their potential risks which AEC has developed in the course of its engineering evaluation of reactor safety in the design of nuclear plants. Since these accidents are common to all nuclear power plants of a given type, EPA concurs with the AEC's approach to evaluate the environmental risk for each accident class on a generic basis. The AEC has in the past and still continues to devote extensive efforts to assure safety through plant design and accident analyses in the licensing process on a case-by-case basis. EPA, however, favors the additional step now being undertaken by the AEC of a thorough analysis on a more quantitative basis of the risk of potential accidents in all ranges. We continue to encourage this effort and urge the AEC to press forward to its timely

completion and publication. EPA believes this will result in a better understanding of the possible risks to the environment.

In order to provide a fuller understanding of the direction of these efforts, it is requested that the final statement (either directly or by publicly available reference) provide information on the nature, expected schedule, and level of effort of those generic studies which are expected to lead to a basis for a subsequent assessment by the AEC concerning the risk from all potential accidents classes in the Nine Mile Point Station. It is recognized that this subsequent assessment may be either generic or specific in nature depending on the outcome of the generic studies. In addition, the final statement should include an AEC commitment that this assessment will be made publicly available within a reasonable time period following completion of the generic studies. Clearly, if the above efforts indicate that unwarranted risks are being taken at the Nine Mile Point Station we are confident that the AEC will assure appropriate corrective action. Similarly, if EPA efforts related to the accident area uncover any environmentally unacceptable conditions related to the safety of the Nine Mile Point Station, we will make our views known.

NON-RADIOLOGICAL ASPECTS

Biological Considerations

Nine Mile Point Unit 1 has been in operation for 3 1/2 years. During that period the applicant has had the opportunity to perform comprehensive monitoring of the biological effects of the once-through cooling system. In particular, complete analyses of losses by impingement and entrainment could have been performed and the results made available at this time. These could have been used as a basis for judging the acceptability of the present cooling system design as it affects the aquatic ecology. Instead, over the 3 1/2 years of the plant's operation, the applicant has carried out an incomplete and insufficient monitoring program, the results of which are inadequate for purposes of determining the environmental impact of the plant's operation.

The inadequacies of the present monitoring program were indicated by us in our review of the draft impact statement for Nine Mile Point Unit 2. To recapitulate these objections, they are:

(1) the impingement study characterizes 90 hours out of the roughly 30,000 that the plant has been operative.

(2) combined effects of operations with once-through cooling lead to estimates by this office (using data submitted) of very large fish losses at certain times of the year.

(3) the impingement studies were only done over a limited time of year.

(4) no studies at all were done on entrainment of fish larvae and fry. This effect, coupled with impingement losses mentioned above, could conceivably be very severe.

(5) the results of past entrainment studies are inadequate and not useful.

(6) the effect of the plant's operation on the overall aquatic ecosystem of the area has not been assessed through monitoring, nor could it be in the absence of data on impingement and entrainment losses.

The result is that information does not exist which would allow a determination of the impact of the plant's cooling water system on aquatic organisms.

Indications are, however, that significant losses due to entrainment and impingement will occur. We concur with the AEC staff's conclusion that complete mortality will result to entrained organisms when exposed to a 32°F temperature rise and a transit time of 6 minutes. Fish which enter through the intake structure are likely to suffer 100% mortality also, and, since the structure is located in a region known to have high concentrations of fish, this loss could be substantial. The true extent of all these losses has not, as we indicated above, been quantified. Consequently, a judgement of the impact of the plant on the aquatic ecology cannot be made.

In the Summary and Conclusions section the staff recommends that the applicant undertake a much expanded environmental monitoring program for determining the plant's impact on the aquatic environment. We concur

with this recommendation. Certain aspects of this program need further explanation, however. The portion dealing with intake effects does not describe the duration of the fish monitoring program. Also, the proposed laboratory entrainment studies consider the effect of temperature but totally ignore the mechanical stress experienced during a six minute transit time. This mechanical stress is probably more harmful than the thermal stress and the two in conjunction work synergistically to produce the actual loss. Thus, in order to accurately determine entrainment losses a technique should be developed to simulate the actual stress experienced by entrained organisms.

Since the goal of the proposed monitoring program is to determine the effect of entrainment and impingement losses on the lake ecosystem, the total impact of all plants in the area must be determined. Rather than separate monitoring programs for Nine Mile Point Units 1 and 2 and the FitzPatrick plant, a single monitoring effort for all three plants should be instituted. Thus, impingement and entrainment loss data from the three plants could be correlated with the data from a single lake population study and effects, if any, determined.

The staff precedes their recommendation of a monitoring program with the conclusion that the current provisional operating license should be converted to a full-term license. It is stated that this is the action called for under the National Environmental Policy Act (NEPA). It is our opinion, based on the lack of sufficient information with which to assess the environmental impact of the plant, that the requirements of NEPA have not been satisfied, and therefore that no action is called for.

Considering the lack of information, which is discussed above, an evaluation of the environmental impact of this action, sufficient under NEPA, is not possible. We do not see the requirements of NEPA being satisfied until the proposed monitoring program is completed and there are sufficient data available so that the effects of the plant can be assessed. Therefore, we recommend that the full-term license not be issued until such time as the environmental impact of the action can be fully evaluated. Only when the required information is available, should a final environmental impact statement be issued as a basis for the decision on the full-term operating license.

Thermal Considerations

As reported in the EIS, New York State thermal discharge criteria limit the rise in surface temperature in the receiving water to 3°F within a 300 foot radius area (6.5 acres). With the present discharge system, the area encompassed by the 3° isotherm of Unit 1 ranges from 50 to 400 acres. Even at the low end of the range, New York State thermal criteria are grossly exceeded. It can then be assumed that when the discharge from Unit 2 and the discharges from Unit 2 and the Fitz-Patrick plant are superimposed on the Unit 1 plume, the situation will be worse still.

This EIS barely mentions and neglects any discussion of the applicant's proposal, contained in the draft statement for Nine Mile Point Unit 2, to combine the Unit 1 and 2 discharges into a single submerged jet diffuser. This type of discharge has a significant effect on plume

size and would alter considerably the size of the plume encompassed by the 3° isotherm. The way that this might affect compliance with thermal criteria should have been completely analyzed in this draft statement. Also, the result of any interaction with the plume of the FitzPatrick plant should have been analyzed. Both of these analyses should be included in the final statement, and will be considerations in the issuance by EPA of a Section 402 discharge permit under the Federal Water Pollution Control Act (FWPCA).

In accordance with the FWPCA, discharges to navigable waters are subject to effluent limitations reflecting the "best practicable control technology currently available" by July 1, 1977, or to stricter limitations if they are necessary to meet applicable water quality standards. By July 1, 1983, dischargers must achieve effluent controls reflecting the "best available technology economically achievable." (For the thermal component of discharges, a reevaluation of the limitations imposed by the Administrator of EPA is possible under Section 316, FWPCA.)

Definitions of the technology-based terms are scheduled for promulgation in October 1973. The cooling system as now operated causes a violation of existing criteria, as noted above, and we anticipate that the discharge will be in violation of a revision to Federal-State standards now pending under the FWPCA. Furthermore, the discharge would, in all probability, fail to meet the effluent limitations guidelines, once promulgated. The applicant should, therefore, evaluate alternative heat dissipation systems for this facility, including closed-cycle system alternatives, taking into account the relationship of waste heat effects

from Unit II and FitzPatrick as well as Unit I. Such evaluation should be included in the final statement.

Other Water Quality Effects

The AEC staff has concluded (page 5-6) with respect to the increase in total dissolved solids as a result of plant operation, that "no lake-wide effect will be discernible." We recommend that the applicant include an evaluation of local impacts, and justify the non-compliance with requirements for total dissolved solids levels of the Minimum Federal Water Quality Criteria and the International Agreement on Great Lakes Water Quality (April 15, 1972). The draft statement also recognizes (page 5-7) the non-compliance of Nine Mile Point, Unit I, with requirements for the addition of phosphates to receiving waters of the Minimum Federal Water Quality Criteria and the International Agreement on Great Lakes Water Quality. The applicant should present, in the final statement, detailed justification for this non-compliance.

Air Quality and Meteorology

The impact statement should provide a discussion of the mechanical equipment at the facility which has a potential for emitting non-radiological air pollutants. Information for auxiliary boilers and diesel engines should be provided relating to size of equipment, fuel type, fuel analysis, fuel use rate and frequency of use for each type of equipment, and pollutant emission factors employed in estimating air pollutant emissions.

Information should be provided in the final statement relative to the impact of the high voltage transmission line ozone prediction rate and its potential environmental impacts.

The statement should provide a discussion of the existing ambient air quality and the anticipated ambient air quality with and without the facility in operation.

Meteorological material presented in this draft and environmental and the environmental statement for Unit 1 is essentially identical to that presented earlier for Unit 2. Our meteorological comments remain the same as those presented in our letter of May 25, 1973, on Nine Mile Point Nuclear Station, Unit II.