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Docket No. 50-410

APR 22 1977

Mr. Gerald K. Rhode
Vice President - Engineering
Niagara Mohawk Power Corporation
300 Erie Boulevard West
Syracuse, New York 13202

Dear Mr. Rhode:

This is in further response to your letter of July 19, 1976 to which we initially responded on August 16, 1976. The purpose of this letter is to clarify our August 16, 1976 response and to request additional information.

For us to determine whether the change from once-through cooling to a cooling tower system at the Nine Mile Point Nuclear Station, Unit 2, will require a construction permit amendment, it is necessary that we review such a proposed change to determine the safety and environmental implications, if any.

Accordingly, pursuant to 10 CFR 50.54(f) you are requested to furnish the information identified in Enclosure A. This information is required before we can proceed with the appropriate safety and environmental assessments of your proposal to change the cooling system from the presently approved once-through system to cooling tower.

Pending completion of this review, any further construction activities associated with installation of the closed cycle cooling system are undertaken at your own risk.

Sincerely,

Original signed by W. H. Regan, Jr.

Wm. H. Regan, Jr., Chief
Environmental Projects Branch 2
Division of Site Safety and
Environmental Analysis

Enclosure:
As stated

cc: (see attached list)

OFFICE	DSE:EP-2	DSE:EP-2	LWR-4	OELD	DSE:EP-2	
SURNAME	JNorris:aj	MDuncan	WKane	BMBordenick	WRegan	
DATE	3/21/77	3/22/77	3/23/77	3/24/77	3/22/77	

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APR 22 1977

cc w/encl:

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DATE ➤						

Enclosure A

ADDITIONAL INFORMATION REQUIRED FOR PROPOSED COOLING SYSTEM DESIGN CHANGE, NINE MILE POINT, UNIT NO. 2

1. Provide the following performance characteristics (for design and off-design), as applicable for this system:

   (1) Air and water mass flow rates at tower emission point,

   (2) Efflux speed,

   (3) Temperature of water entering and leaving the tower,

   (4) Temperature of air leaving the tower,

   (5) Amount of heat released.

2. Provide the following drift characteristics for this system:

   (1) Expected size distribution of drift droplets,

   (2) Concentration of dissolved and suspended solids in the tower basin.

   If these values differ from those put into the Tsai & Johnson drift model, your reference 6, please discuss the impact on your predicted drift rates.

3. Substantiate that the Tsai and Johnson drift model, your reference 6, is applicable for use at this site and with the proposed cooling system. Include in your discussion whether the values of your input data (tower characteristics and meteorological variables) are within the range of the data used to formulate this model.

4. In addition to Figures 5 & 6, Water and Salt drift for an annual period, provide figures showing water and salt drift amounts for each month or season of the year.

5. Substantiate that the Kaylor, Petrillo, and Tsai plume model, your reference 7, is applicable for use at this site and with this proposed cooling system. Include in your discussion whether the values of your input data (tower characteristics and meteorological variables) are within the range of data used to formulate the model.

6. Substantiate that the use of your referenced Rochester data are applicable for drift and plume predictions at the Nine Mile Point site. Include in your discussion a comparison of Rochester data (dry- and wet-bulb temperatures, wind speed and direction) with data collected onsite during a concurrent period.

7. In addition to Figures 8-12, Predicted Annual Plume Lengths, provide figures showing monthly or seasonal elevated plume lengths.

8. Considering other local man-made thermal inputs to the atmosphere, discuss the potential for weather modification resulting from the addition of the Nine Mile Point system. Include additional precipitation, cloud formation and shadowing, and annual and monthly increase in humidity for nearby agricultural areas.

9. Discuss chemical interaction of the cooling system plume with existing nearby pollutant sources, such as the cooling plume combining with fossil, chemical, or industrial plant plumes.

10. Discuss effects that the construction, operation, and location of the proposed cooling tower may have on the data collected on the onsite meteorological tower.

11. Clarify if the proposed design change will result in placing the intake and discharge structures at different locations from those previously reviewed. If applicable, any new location should be described with respect to:

    a) the location of the previously proposed once-through system intake and discharge structures;

    b) the locations of the sampling stations occupied to assess impacts;

    c) the abundance of aquatic biota and species considered "important" with regard to potential impacts of construction and operation;

    d) the potential effects of construction and operation of the intake and discharge structures in their new proposed location.

12. Provide a description (along with illustrative figures) of any design features of the intake and discharge structures which differ from those previously proposed. To be included are the intake velocity, discharge velocity, and the proposed "fish-guidance-bypass-return-to-lake system."

13. Provide a discussion and evaluation of the effectiveness and anticipated reduction in fish mortality as a result of the "fish-guidance-bypass-return-to-lake system."

14. The original design for Unit No. 2 proposed to combine the discharges of Unit No. 1 and Unit No. 2. Provide an assessment of the potential impacts resulting from:

    a) discharging at two separate locations rather than at one location;

    b) the construction of two new structures (intake and discharge) rather than one (intake only).

15. We have reviewed your July, 1976 report, "Circulating Water Cooling System Employing a Natural Draft Cooling Tower." As a result of this review, we have several questions regarding the capability of this system to satisfy the hydrologic criteria suggested in Regulatory Guide 1.27, "Ultimate Heat Sink for Nuclear Power Plants."

    As presented in your report, the ultimate heat sink complex does not meet the criteria of R.G. 1.27, in that the system apparently cannot tolerate a single failure of the intake structure or intake tunnel. It is not clear how cooling will be accomplished if such failures occur. Alternate means of obtaining cooling water have not been documented in your report. In addition, the seismic capability of the service water system has not been documented.

    Accordingly, document that the ultimate heat sink complex has sufficient redundancy to withstand the above single failures. Provide the seismic capability of the various structures, and document that the system meets the criteria suggested in R.G. 1.27. Provide information regarding the conceptual design of the proposed system, including sections, plans, and drawings of sufficient detail to show the locations, elevations, and features of the various structures of the system.