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RECIP.NAME RECIPIENT AFFILIATION
TEDESCO,R.L. Assistant Director for Licensing

mA/4

SUBJECT: Forwards addl info required for cooling tower rept review, per NRC 800909 request. Oversize drawing available in Central Files.

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NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/300 ERIE BOULEVARD WEST, SYRACUSE, NEW YORK 13202/TELEPHONE (315) 474-1511

November 21, 1980

Mr. Robert C. Tedesco, Assistant Director
for Licensing
Division of Licensing
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Tedesco:

Re: Nine Mile Point Unit 2
Docket No. 50-410

Enclosed is the additional information requested in your letter of September 9, 1980 regarding the Nine Mile Point Unit 2 cooling tower.

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION

Gerald K. Rhode
Vice President
System Project Management

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NE MILE POINT NUCLEAR STATION - UNIT 2
NIAGARA MOHAWK POWER CORPORATION

Additional Information Required For
The Cooling Tower Report Review

Question 1:

Update the Cooling Tower Report, dated July 19, 1976, with respect to major design changes of the cooling tower system as described in sections 2.0 and 3.0 of your report. Specifically, provide cooling tower dimensions, location, flow rates, atmospheric design conditions, a description of the circulating water treatment system, and other major design information that has changed since the report issuance.

Response 1:

Figure 1, Natural Draft Cooling Tower General Arrangement provides updated cooling tower dimensions.

Figure 2 indicates the location of the cooling tower.

There have been no changes to Chapter 3 of the cooling tower report. Chapter 2 has some minor changes as indicated below:

2.1.1 Circulating Water System Description

The objective of the circulating water system is to provide the main condenser with a continuous supply of cooling water. The water is used to remove the heat rejected from the turbine exhaust, turbine bypass steam, and other power conversion cycle dumps over the full range of operating loads.

The closed-loop circulating water system consists of the main condenser, the cooling tower, and six circulating water pumps.

Water leaves the cooling tower cold water basin through a discharge flume which contains six bays of stationary screens. The screens are located within a closed screenhouse with hoists and facilities available for removing and cleaning the screens.

The cooling water is conveyed from the discharge flume through two 120-inch diameter pipes approximately 1,250 feet to the circulating water pumps. The two pipes manifold into six 72-inch diameter pipes, each with a motor-operated butterfly valve and expansion joint, which are connected to the six vertical dry-pit pump suctions. Each pump discharge is individually connected to the six condenser inlets with a 72-inch diameter pipe. Expansion joints are located at each pump discharge and each condenser inlet. An expansion joint and motor-operated butterfly valve are located on each of the six 72-inch diameter condenser outlet pipes.

The six condenser outlet pipes manifold into two 120-inch diameter pipes which carry the heated water approximately 1,000 feet to the cooling tower. At the cooling tower, the 120-inch pipes connect to the riser pipes and distribution piping. After passing through the distribution piping and the tower fill, the cooled water falls into the tower basin where the cooling cycle is repeated.

2.1.2 Operational Modes

The circulating water system is designed to convey 580,000 gpm of cooling water between the main condenser and the natural draft cooling tower.

Makeup water for the circulating water system is obtained from the service water system. After passing through the service water heat exchangers, a constant flow of 25,000 gpm is discharged into one 120-inch diameter pipe upstream of the circulating water pumps. The remaining portion, called the service water bypass, is discharged into the screenwall discharge bay. The quantity of makeup flow is maintained by a flow control valve.

Blowdown from the circulating water system is controlled at a rate to maintain the closed-loop chemical concentrations at $\leq$ 2.0 times the lake water concentration. Blowdown is taken from the discharge lines of the circulating water pumps and is regulated by a flow control valve. The blowdown is routed to the screenwell discharge bay where it is mixed with the service water bypass and discharged to the lake.

During the winter months, warm water from the circulating water system is used to temper the lake intake water. The tempering water is taken from the circulating water pipe downstream of the condenser outlet and is conveyed to the screenwell intake bay where it is mixed with the lake intake flow. A flow control valve regulates the tempering flow in order to maintain a minimum fixed flow temperature of 38°F.

2.4 Circulating Water Treatment System

In order to maintain clean heat exchanger surfaces, sulfuric acid and sodium hypochlorite are added to the circulating water system. Calcium carbonate scaling in piping, in the cooling tower, and in the condenser is controlled by adding sulfuric acid in sufficient quantities to reduce, but not completely remove, the alkalinity of the circulating water. Biological fouling of the piping and condenser is prevented by adding sodium hypochlorite daily. The acid solution is added downstream of the condenser and the sodium hypochlorite solution is added upstream of the condenser.

Question 2:

Forward copies of the following publications of the Oswego County Planning Board, if current editions (since 1977) are available: Oswego County Data and Oswego County: 1985 and 1990 Land Use Plan.

Response 2:

Oswego County Planning Board has not made any revised editions to the publications mentioned above since 1977. This information was obtained via a telephone conversation with Mr. Alan Hawkins, Director, Oswego County Planning Board, County Office Building, 46 East Bridge Street, Oswego, New York 13126, telephone number (315) 349-3292.

Question 3:

Provide the most current data available for the Nine Mile Point impact area (the towns of Mexico, Minetto, New Haven, Scriba, Volney, and Richland; Oswego City, and Oswego County) for the following categories:

a. Current population estimates
b. Population projections for 1990
c. Acreage in farmland and in cropland (as a subcategory)
d. Assessed value, tax rates per $100 assessed valuation, and amount of taxes levied (town and county).

Response 3:

Table Q3-1, Nine Mile Point Impact Area, contains the requested information.

Question 4:

Provide the most current data available in Oswego County for the following categories:

a. Percentage distribution of land use categories
b. Total number of farms with sales of $2,500 and over, and the number with sales less than $2,500
c. Total number of dairy farms with sales of $2,500 and over in value of dairy products.

Response 4:

a. Percentage distribution of land use categories.

	Percent of County
Active agriculture	16.1
Woodlands	
Forests	19.2
Brushland	30.2
Wetlands	12.7
Water	7.1
Residential	
High density	0.4
Medium density	0.2
Low density	0.3
Other	0.7
Commercial	0.1
Industrial	0.1
Extractive	0.4
Public and Semipublic	0.4
Outdoor Recreation	0.2
Transportation	0.6
Nonproductive	11.3
Total	100.0

Source: Final Oswego County Subplan, Central New York Regional Planning and Development Board, May 1979.

b.

	1969	1974
Total number of farms	1,000	979
With sales of $2,500 and over	607	529
With sales Less than $2,500	393	450

Source: Oswego County Data, Oswego County Planning Board, 1977.

c.

	1969	1974
Dairy farms with sales of $2,500 and over	380	270
Value of dairy products sold	$7,106,000	$9,104,000

Source: Oswego County Data, Oswego County Planning Board, 1977.

Question 5:

Since the submittal of your 1976 report, have there been any changes to the primary network of highways in Oswego County?

Response 5:

Since the submittal of the Report on Circulating Water System Employing a Natural Draft Cooling Tower, June 1976, there have been no changes to the primary network of highways in Oswego County. This information was obtained from Oswego County Planning Board, County Office Building, 46 East Bridge Street, Oswego, New York 13126, telephone number (315) 349-3292.

Question 6:

Since 1976, have there been changes in the responsibilities for providing services at the town and county levels?

Response 6:

There have been no significant changes in the responsibilities for providing services at the town and county levels. This information was obtained by contacting the Scriba Township Clerk (telephone number (315) 343-3375) and Oswego County Office (telephone number (315) 349-3200).

Question 7:

Since the publication of Appendix C of your Environmental Review, have any historical sites been added to the list?

Response 7:

Since the submittal of Appendix C of the Environmental Report - Construction Permit Stage, Docket 50-410, there have been several additions to the list of historic sites. They are as follows:

a. National Register of Historic Places

1. Richardson - Bates House, 135 E. 3rd Street, Oswego, NY
2. City Hall, W. Oneida Street, Oswego, NY
3. U.S. Customs House, W. Oneida Street, Oswego NY
4. Walton and Willet Stone Store, 1 Seneca Street, Oswego, NY

b. State Inventory of Historical Places

1. Shepard Estate, New Haven Township, NY

The following agencies were contacted to obtain the above information:

a. New York State Parks and Recreation
Historical Preservation Field Studies
Agency Building
Empire State Plaza
Albany, NY 12238
(518) 474-3176

b. Oswego County Historical Society
135 East 3rd Street
Oswego, NY
(315) 343-1342
Attention: Mr. Michael Cahall, Curator

Question 8:

Have you applied for local tax exemption of the cooling tower as a pollution control device? If so, has a determination been rendered by the State?

Response 8:

Niagara Mohawk has not applied for a local tax exemption of the cooling tower as a pollution control device, since the tower has not been built. Once the tower is built and taxed, it is anticipated that we will apply for a local tax exemption for the cooling tower as a pollution control device.

Question 9:

Provide a schedule of constructing the cooling tower and the relationship of this schedule to the overall schedule of constructing the plant. Also, estimate the number of manual workers required to construct the tower and the total number necessary to construct the station, including those working on the tower. Provide these estimates of workers for each quarter during the period of construction of the tower.

Response 9:

The construction schedule requirements for the cooling tower are as follows:

Construction Activity	Start Date	Completion Date
Mobilization	3/23/81	4/20/81
Ring beam	4/6/81	6/15/81
Basin slab	6/22/81	10/26/81
Inlet and risers	6/6/83	10/17/83
Shell	3/15/82	11/29/82
Basin wall	9/12/83	11/7/83
Precast (fabrication)	3/8/82	11/8/82
Precast (erection)	4/11/83	8/29/83
PVC fill and internals	5/2/83	10/3/83
Complete all work and demobilize	N/A	12/3/83

Cooling tower construction is scheduled to allow for sufficient time for system preoperational testing.

The construction schedule for the cooling tower does not have any adverse impact on the overall schedule for constructing the plant. The commercial operation date for Unit 2 is October 1986.

The number of manual workers required to construct the tower and the total required for the station including those working on the tower is estimated to be as follows:

	Cooling Tower	Total Station
1st Qtr 1981 (Jan, Feb, Mar)	8	1,043
2nd Qtr 1981 (Apr, May, Jun)	80	1,757
3rd Qtr 1981 (Jul, Aug, Sep)	85	2,022
4th Qtr 1981 (Oct, Nov, Dec)	80	2,065
1st Qtr 1982 (Jan, Feb, Mar)	10	2,214
2nd Qtr 1982 (Apr, May, Jun)	85	2,490
3rd Qtr 1982 (Jul, Aug, Sep)	90	2,491
4th Qtr 1982 (Oct, Nov, Dec)	90	2,325
1st Qtr 1983 (Jan, Feb, Mar)	6	2,004
2nd Qtr 1983 (Apr, May, Jun)	55	2,004
3rd Qtr 1983 (Jul, Aug, Sep)	60	2,004
4th Qtr 1983 (Oct, Nov, Dec)	50	2,004

Question 10:

In section 5.0 of your 1976 report, you estimated the cost of the cooling tower to be approximately $10 million. Provide a current estimate (in 1976 dollars) of the cost of the cooling tower, for comparison.

Response 10:

Present cost of the cooling tower in 1976 dollars is $16 million.

Question 11:

For substances which are to be added to the cooling system, provide the relevant water quality criteria and standards which have been established under the International Agreement on Great Lakes Quality between the Unites States and Canada.

Response 11:

The substances added to the cooling system are sodium hypochlorite and sulfuric acid. There is no standard or criteria set for these two substances, nor is there any standard established for chlorine, chlorides, or sulfates.

The above information was obtained from:

a. International Joint Commmission
Great Lakes Regional Office
100 Oellette Avenue
Windsor, Ontario N9A6T3
Canada
Attn: Dr. Bratjel

b. Great Lakes Water Quality Agreement, 1978.
International Joint Commission

Question 12:

Indicate the status of compliance of the waters of Lake Ontario in the vicinity of the station with these criteria and standards.

Response 12:

Nine Mile Point Nuclear Station - Unit 2 will comply with the water quality criteria and standards established by the International Joint Commission under the 1978 agreement between the United States and Canada.

Question 13:

Indicate how discharges from the cooling system will affect concentrations of substances for which criteria or standards have been established.

Response 13:

The discharges from the cooling system will not have any adverse effect on the criteria or standards that have been established.

The combined plant effluent at the diffuser will have concentrations less than the cooling tower blowdown due to dilution by once-through service water not used for makeup to the cooling tower. Further, the concentrations will be diluted approximately 10 times with lake water in the zone of active mixing by the turbulence of the discharge.

TABLE Q3-1

NINE MILE POINT IMPACT AREA

Town (T), City (C), or County (Co)	Current Population [1]	Population Projection for 1990 [1]	Acreage in Farmland [2]	Acreage in Cropland [2]	Assessed Value	Tax Rate per $1000 Assessed Valuation [1]		Amount of Taxes Levied [1]	
						County	Town	Town	County
Mexico (T)	5,075	6,206	6,641	3,854	4,939,654	79.20	61.30	267,402	391,358
Minetto (T)	2,124	2,563	-	-	2,239,348	115.00	40.60	115,062	257,702
[redacted] Haven (T)	2,242	2,698	2,521	1,199	1,324,185	136.80	71.30	104,524	181,081
Scriba (T)	4,485	5,397	926	384	29,783,373	61.20	12.60	454,987	2,701,427
Volney (T)	5,430	6,341	1,616	860	12,396,246	88.70	37.32	216,151	759,014
Richland (T)	6,374	7,556	7,505	3,934	5,911,849	68.51	51.09	202,765	524,346
Oswego (C)	25,379	26,986	564 Note 1	181 Note 1	87,167,423	88.70	37.32	-	5,971,466
Oswego (Co)	117,089	135,459	66,704	31,827	214,027,516	-	-	3,442,445	16,500,667

Note:

1. [redacted] Figures are for Oswego (town).

References:

1. Oswego County Data, Oswego County Planning Board, 1977, using 1980 Projected figures as current population.

2. Oswego County Preliminary Land Use Plan, Oswego County Planning Board, 1976, Table 39.

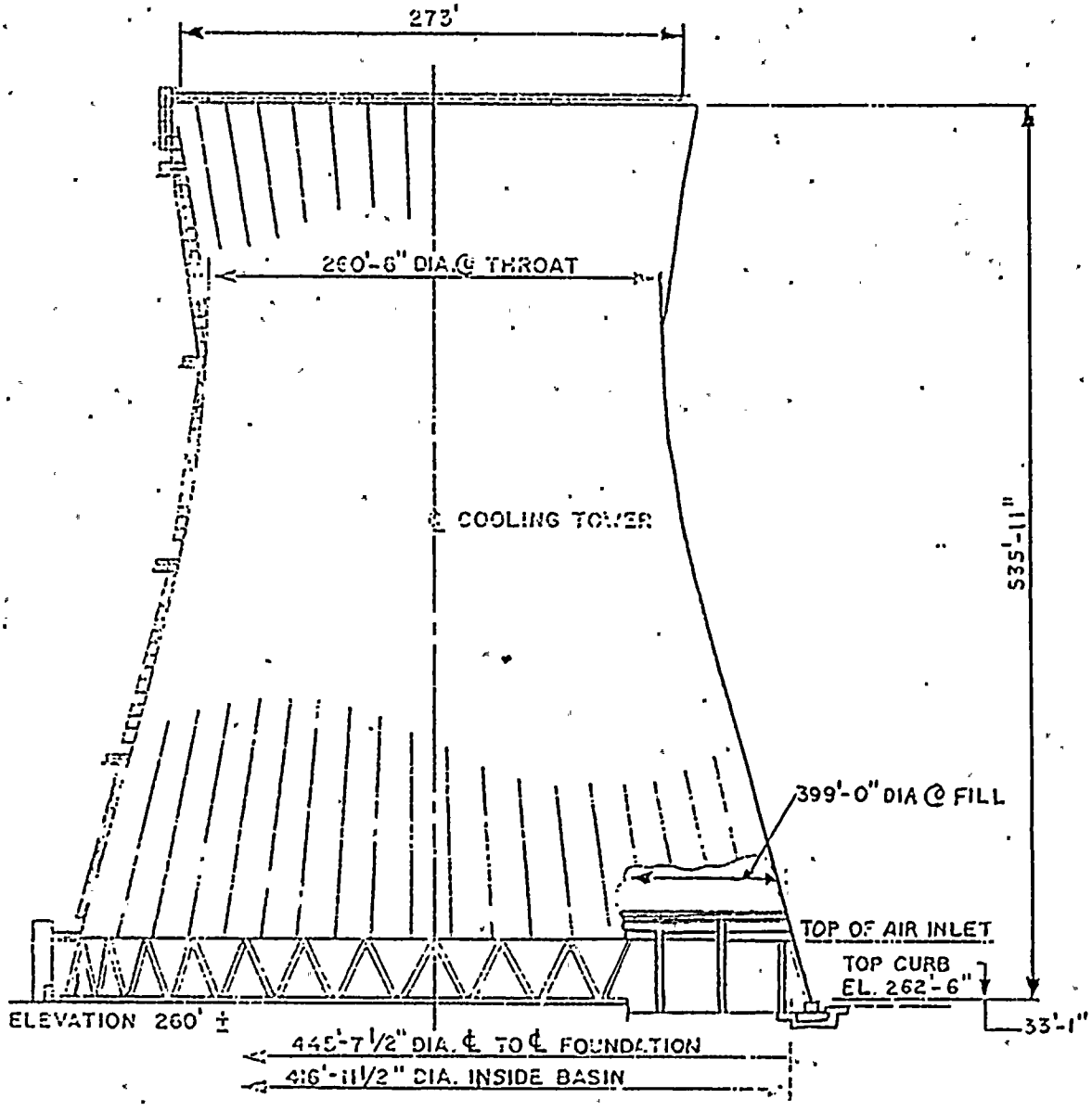

FIGURE 1
NATURAL DRAFT COOLING TOWER
GENERAL ARRANGEMENTS
NINE MILE POINT NUCLEAR STATION-UNIT 2
NIAGARA MOHAWK POWER CORPORATION