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AUTH.NAME AUTHOR AFFILIATION
LEMPGES,T.E. Niagara Mohawk Power Corp.
RECIP.NAME RECIPIENT AFFILIATION
DENTON,H.R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Requests NRC certification that pollution control facilities to be financed by tax emempt bond in furtherance of purpose of abating or controlling pollution.Certification needed for Internal Revenue Svc requirement.

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NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/300 ERIE BOULEVARD WEST, SYRACUSE, N.Y. 13202/TELEPHONE (315) 474-1511

August 13, 1985

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Nine Mile Point Unit 1
Docket 50-220
DPR-63

Dear Mr. Denton:

Niagara Mohawk Power Corporation is preparing a tax exempt bond financing for pollution control facilities at its Nine Mile Point Station. The Internal Revenue Service requires that a federal, state or local agency exercising jurisdiction certify that the facility to be financed with tax exempt bonds is in furtherance of the purpose of abating or controlling atmospheric pollutants, or contaminants, or water pollution.

For radioactive pollution control, the agency with jurisdiction is the Nuclear Regulatory Commission. We have prepared a form of certificate (attached herewith) which will meet the Internal Revenue Service's requirements. In addition, we have included a description of the pollution control equipment we wish to be covered by the certificate. We understand that you have received and approved this type of certificate for several utilities.

Please review the attachments, and if you agree, sign and return the certificate to Niagara Mohawk and send a copy to the following address:

New York State Energy Research and Development Authority
Agency Building #2
Empire State Plaza
Albany, New York 12223

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION

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PDR ADOCK 05000220
I PDR

T. E. Lempges
Vice President
Nuclear Generation

TEL/MGM:bd
Attachments

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CERTIFICATE

NINE MILE POINT UNIT NO. 1

POLLUTION CONTROL FACILITIES

The Nuclear Regulatory Commission hereby certifies as follows:

(a) that it has examined exhibits, attached hereto, which describe certain facilities which have been constructed at Nine Mile Point Unit 1, a nuclear electric power generating plant located on Lake Ontario in Scriba, New York owned by Niagara Mohawk Power Corporation; and

(b) that such facilities, as designed, are in furtherance of the purpose of abating or controlling atmospheric pollutants or contaminants or water pollutants resulting from the generation of electricity at the Nine Mile Point Unit 1.

For the Nuclear Regulatory Commission

Date: _____

EXHIBIT A

## OFF GAS SYSTEM

### General

The off gas system shall:

a. Remove non-condensible gases from the primary cooling system.

b. Recombine the oxygen and hydrogen content which is formed by radiolysis in the primary cooling system.

c. Reduce by decay the activity of the gas stream which is discharged to the atmosphere.

Most of the gases to be handled by the off-gas system are removed from the turbine condenser together with the air inleakage.

The gas/air mixture is removed by steam ejectors from the turbine condenser, slightly superheated to facilitate the recombination process and routed to the recombiners where the recombination process of the free $H_2$ and $O_2$ content takes place. The gas/air mixture and the diluting steam are superheated during the recombination process and leave the recombiners at a temperature of approximately 850°F. A condenser and an after cooler are used to condense the steam and to lower the temperature of the gas/air mixture. The mixture then passes through a chiller, a preadsorber, carbon adsorbers, mechanical filter and is finally pumped by water ring pumps to the stack. The gas stream from the off-gas system is mixed inside the stack with the exhaust air from the ventilation system, which brings about an appreciable dilution effect.

### Description of Components

The different components are individually designed for the composition of the gas/air mixture. The following results are intended:

a. Reduction of gas volume

b. Cleaning the gas stream

c. Delaying and drying the gas stream

#### Recombiner System

The gas/air-stream mixture passes through a mixing heater unit after it has left the steam ejectors to superheat the steam before entering the recombiner. A catalyst is used inside the recombiner to reduce the diluted $H_2$-$O_2$ mixture to water which evaporates instantly. The steam content of the mixture is condensed in a condenser after it has left the recombiner and the gas/air mixture is cooled further in an after-cooler. There are two (2) recombiners installed, one is on standby.

EXHIBIT A

OFF GAS SYSTEM (cont'd)

Mixing Heater Unit

The mixing heater is a direct contact type of heater. Additional steam is introduced to supplement the discharge steam from the steam jet ejectors to superheat the mixture slightly, to reduce hydrogen concentrations, and to have adequate flow to cool the recombiners.

Recombiner

The recombiner is a vertically mounted pressure vessel. The gas/air-steam mixture enters the recombiner at the top, flows through the catalyst where the recombination of the $H_2$ and $O_2$ content takes place and leaves the recombiner at the bottom. The $H_2$-$O_2$ recombination takes place automatically. An electric heater is provided, however, to assure prompt ignition.

Condenser

The condenser is a horizontally mounted U-tube heat exchanger. The nozzles for the cooling water are welded into the water chamber which is located at one end of the condenser. The water chamber and the tube bundle can be separated from the condenser for cleaning purposes. The shell side of the condenser is equipped with a condensate trap.

After Cooler

The humidity of the gas stream is reduced in the after cooler. The gas stream in the after cooler consists of air, traces of activated gases and traces of fission gases. The after cooler is a horizontally mounted shell and tube heat exchanger. The gases flow in many passes around the tube bundle while the cooling water flows in passes through the tubes. A water separator is provided at the gas outlet to trap condensate droplets.

Chiller

The delay of the off-gas stream in the charcoal units functions best if the gas is kept as dry as technically feasible. There are three (3) chillers provided which alternate on an approximately eight (8) hour cycle. One is in operation while the other one is being deiced for one hour then idle for four (4) hours and then precooled for three (3) hours. Water droplets are mechanically removed at the chiller inlet and the remaining humidity is frozen out at -4°F.

The heat is removed by a closed cycle refrigeration system. Each chiller has its own refrigeration system. A third chiller and refrigeration system is on standby for any of the other two. The control of the chillers is automatic.

EXHIBIT A

OFF GAS SYSTEM (cont'd)

Pre Adsorber

The Preadsorber is a vertical container. The filter media is charcoal. There are two (2) installed, one operating and one standby. The gas enters the filter from the top, is carried in a center pipe to the bottom and flows in a distribution system through the filter media. The filter is located in a shielded room. The filter media fill and drain nozzles are extended through the shielded walls to the upper or lower floor, respectively.

Charcoal Units

The delay system consists of a number of tanks, filled with charcoal and connected in series. The tanks are vertically mounted and the gas flow is from bottom to top.

Absolute Filter (Mechanical Filter)

The absolute filters shall remove radioactive particles and other impurities from the off-gas system. The filter elements are removable and are contained in a vertically mounted vessel. The gas flows through the filter from bottom to top.

Water Ring Pumps

The off-gas system is operated at a vacuum to avoid leakage of radioactive gases into the areas where the components of the off gas system are located. Two water ring pumps are installed (one standby) to draw a vacuum on the system. The pumps are sufficiently over designed to cope with an increasing pressure drop of the system. The water is separated from the gas stream in a ring water storage tank and the gas is pumped to the stack.

General

The components of the off gas system are located in closed and ventilated rooms. Shielding is provided. Piping which carries the off gas stream should [illegible] no flanged connections. Valves are bellow sealed.

Controls

Operations which influence the overall function of the off gas system are controlled from the control room. Minor process operations are done locally by remote manual control (e.g. extended spindles).

Activity monitors and alarms, pressure and temperature transmitters, flow- and $H_2$-writers and alarms assure the safe operation of the off gas system.

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