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CONTROL NO: 6545

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FROM: <u>Niagara Mohawk Power Corp.</u> <u>Syracuse, N. Y.</u> <u>Gerald K. Rhode</u>			DATE OF DOC <u>6-10-75</u>	DATE REC'D <u>6-17-75</u>	LTR <u>XX</u>	TWX	RPT	OTHER
TO: <u>George Lear</u>			ORIG <u>1 Signed</u>	CC	OTHER	SENT NRC PDR <u>XXXXX</u> SENT LOCAL PDR <u>XXXXX</u>		
CLASS	UNCLASS <u>XXXX</u>	PROP INFO	INPUT	NO CYS REC'D <u>1</u>		DOCKET NO: <u>50-220</u>		

**DESCRIPTION:**

Ltr. trans the following....

**ENCLOSURES:**

Safety evaluation for modification of providing add'l Spent Fuel Storage Capacity.....

PLANT NAME: Nine Mile Point # 1

**DO NOT REMOVE**

**FOR ACTION/INFORMATION**

VCR 6-18-75

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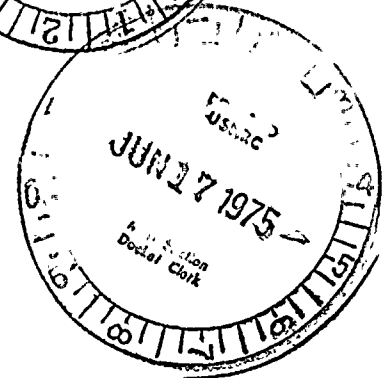
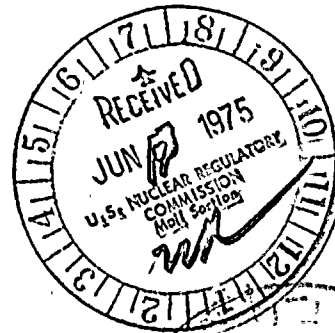
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## NIAGARA MOHAWK POWER CORPORATION

NIAGARA  MOHAWK300 ERIE BOULEVARD WEST  
SYRACUSE, N. Y. 13202

June 10, 1975



Mr. George Lear, Chief  
Operating Reactors Branch #3  
Division of Reactor Licensing  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Re: Nine Mile Point Unit 1  
Docket No. 50-220

Dear Mr. Lear:

Pursuant to Section 50.59 of the Code of Federal Regulations, Title 10, Niagara Mohawk plans to make an addition to its facility under Operating License No. DPR-63. Briefly, this addition is for the purpose of providing additional spent fuel storage capacity.

Attached for your information is a safety evaluation for the modification including a description of the proposed change. This evaluation shows that the probability of occurrence of an accident would not be increased, that no new type of accident would be introduced, and that safety margins for spent fuel storage would not be reduced.

The proposed modification has been reviewed and approved by the Site Operations Review Committee and the Safety Review and Audit Board.

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION



Gerald K. Rhode  
Vice President-Engineering

Attachment

6545



## Nine Mile Point Unit 1

### SAFETY EVALUATION FOR ADDITIONAL SPENT FUEL STORAGE CAPACITY

#### A. SUMMARY

##### 1. Original Design

The spent fuel storage pool is a reinforced concrete structure lined with stainless steel plate. The pool is 33'2" wide, 37' 5 1/2" long, and 38'10" in depth. It was designed specifically to maintain the mean temperature of the pool below 125 F. In so doing, it was originally considered that the pool should accommodate 150 percent of full core capacity and the associated  $20 \times 10^6$  BTU/hr heat load that would result. The spacing of the fuel bundles is maintained such that the Effective Multiplication Factor (Keff) is always less than 0.90.

##### 2. Reason for Change

The addition of twelve spent fuel storage racks is proposed to provide sufficient capability to store a full core discharge following the Fall, 1975 refueling. This additional capability is required due to the recent removal of six spent fuel storage rack locations for installation of the Cask Drop Protection System, and also because of the unavailability of off-site reprocessing facilities.

##### 3. Effect Of Change

Analysis of the proposed addition shows the following:

- a. The probability of occurrence of an accident or malfunction is no greater.
- b. No new type of accident will occur.
- c. There will be no reduction to the margin of safety of the plant.
- d. No change to the Technical Specifications is required.



## B. DISCUSSION

### 1. Proposed Change

The original spent fuel pool design provided for 64 storage rack positions for the spent fuel, control rod blades, and channels. Six of these positions were recently removed because of the installation of a Cask Drop Protection System. At present there are 40 spent fuel storage racks with the capacity for 800 bundles (300 occupied), 13 control rod racks with the capacity for 130 blades (4 occupied), and one channel rack with the capacity for 20 channels (none occupied). Four storage racks positions are presently unoccupied in the pool.

Twelve additional spent fuel storage racks, with the capacity for 240 bundles are proposed. They are identified as "New" in the attached illustration, and will be identical in design to the original racks. Also, spacing of the racks will be identical to the original design.

The addition of the spent fuel storage racks will require that eight control rod racks be moved from their swing bolt positions to an aisle area of the pool floor, per the attached illustration. There, they will be bolted to a support base, and braced laterally for seismic considerations.

### 2. Analysis

#### a. Seismic Considerations on Pool Loading

The spent fuel pool was originally designed assuming all available positions (64) were occupied. The additional racks will result in a net increase of two positions and will have no significant effect on the pool loading. The control rod racks, relocated to the aisle of the pool as proposed, will not overstress the supports of the spent fuel storage racks when subjected to the original horizontal design earthquake acceleration of 0.25 g.

#### b. Shielding

Presently the reactor floor area is a controlled "Radiation Area", where entry is controlled for radiation purposes. As defined in the Station's radiation protection procedures, a "Radiation Area" is one where the radiation level is from 5 mrem/hr to 100 mrem/hr. Presently the dose level around the spent fuel pool area is about 5 mrem/hr, largely a result of the radioactivity in the spent fuel pool water. The increase in the number of spent fuel pool bundles may increase this level slightly but will not cause the control of this area to be changed.

100-100000





c. Effective Multiplication Factor (Keff)

The original calculations which limit keff to less than 0.9 are based on the spacing of the spent fuel storage racks and not the number. The racks being added are designed and will be placed in the pool such that spacing is identical to that of the original racks. Therefore, keff will remain unchanged.

d. Spent Fuel Pool Cooling

The spent fuel pool filtering and cooling system was designed to remove decay heat and impurities from the pool water so as to maintain the mean water temperature at or below 125 F and to assure visual clarity under all anticipated conditions. The proposed addition would provide storage for approximately 200 percent of full core capacity, resulting in a heat load of  $27.3 \times 10^6$  BTU's/hr. Based on a fuel inventory consisting of 60 percent core storage with one year or greater decay, 40 percent with two months decay and 100 percent with 12 days decay, the spent fuel pool filtering and cooling system will still maintain the mean water temperature at or below 125 F and assure visual clarity of the water.

e. U-235 and By-Product Inventory

Our operating license allows for the possession of 3800 kg of U-235 and associated by-products. Calculations show that even after the Spring, 1977 refueling, we will still have less than 3000 kg of U-235 on-site.





