50-220

NIAGARA MOHAWK POWER CORPORATION

NIAGARA MOHAWK

300 ERIE BOULEVARD, WEST
SYRACUSE, N. Y. 13202

December 10, 1974

Mr. Karl R. Goller
Assistant Director of Operating Reactors
Directorate of Licensing
U.S. Atomic Energy Commission
Washington, D.C. 20545

Dear Mr. Goller:

In accordance with the Technical Specifications for the Nine Mile Point Nuclear Station Unit #1, the enclosed Unusual Event is being submitted. This is in the accepted format as detailed in Regulatory Guide 1.16, Rev. 1.

Very truly yours,

R.R. Schneider
Vice President
Electric Operations

TJD/mm

Enc.

50-220 12527
incident

COPY SENT REGION 1

NIAGARA MOHAWK POWER CORPORATION

NIAGARA MOHAWK

NINE MILE POINT NUCLEAR PLANT

UNUSUAL EVENT

1. Docket No. 50-220 DPR-17

2a. Date December 10, 1974

2b. Occurrence Date November 10, 1974

3. Facility NY NMP #1

4. Identification of Occurrence

Nine Mile Point Unit 1 has been informed by General Electric Co., our fuel supplier, that their calculations of fuel channel deflections indicate an increase in core bypass flow over that assumed on the original design.

5. Conditions of Plant

The reactor is presently 2200 MWD/ST into the operating cycle with a targeted cycle exposure potential of 5500 MWD/ST.

6. Description of Occurrence

Nine Mile Point Unit #1 has had a channel measuring and evaluation program for the past several years. Primarily the interested channel deflections are (1) elastic deflection due to differential pressure across the channel wall and (2) permanent deflection due to relaxation of fabricated stresses and inservice creep of irradiated zircalog.

These deflections could potentially cause three problems: (1) an increase in core leakage flow (less water flow thru the fuel assembly) (2) less clearance between the channel and the control rod (control rod interference) (3) less clearance between the corner fuel rod and the inside channel wall. The results of the studies and measurements indicated no control rod interference or corner rod to channel decrease clearance. The channel deflection study did show that an increase in bypass leakage flow has occurred. This concurs with a letter from Mr. J.A, Hinds (G.E. Co.) to the Atomic Energy Commission dated November 28, 1973. In this letter, it was stated that the major effect of channel deformation is a decrease in in-channel flow.

7. Analysis and Corrective Action

Changes in core bypass flow only slightly affect the void coefficient and operational transient analyses. Because a boundary analysis approach was taken in performing the transient analysis, the affects of increased core bypass flow are well within the applicability of the transient analyses and will remain so throughout this cycle. In the future, channels will be replaced on an accelerated schedule and finger springs will be used on reload fuel to control leakage.

The thermal margins during normal operation will be maintained. Minimum critical heat flux ratio will be maintained above 1.9 for all fuel and the minimum critical power racks will be maintained above 1.24 and 1.29 for 7x7 and 8x8 fuel respectively. Conservative adjustments will be applied to our calculational procedures to account for reductions in in-channel flow.

The locus of operating conditions for which the most limiting rod has a minimum critical heat flux ratio equal to 1.0 as described by Figure 2.1.1 of the Technical Specifications is essentially unefected. That curve assumes an initial MCHFR of 1.9 at rated power and total core flow conditions. Because the reduction in in-channel flow is accounted for in the calculations of operation conditions, the initial MCHFR reamins at 1.9 (rated power and core flow) and the effect on the safety limit line is insignificant.

Another potential effect of channel bowing is the possibility of fuel channel-control rod interference. Any interference would be gradual and channels will be replaced well before any expected problems. Scram times and other parameters will be monitored to detect any onset of fuel channel-control rod interference.