NIAGARA MOHAWK POWER CORPORATION

NIAGARA MOHAWK

300 ERIE BOULEVARD WEST
SYRACUSE, N.Y. 13202

September 7, 1973

Mr. Donald J. Skovholt
Assistant Director for Reactor Operations
Division of Reactor Licensing
United States Atomic Energy Commission
Washington, D. C. 20545

Re: Provisional Operating License: DPR-17
Docket No.: 50-220

Dear Mr. Skovholt:

At approximately 1600 hours on August 29, 1973 following a routine calibration of the Local Power Range Monitors (LPRM) and subsequent core power distribution calculations, four fuel bundle segments were found to be operating slightly in excess of the allowable average planar LHGR as shown in Technical Specifications Figure 3.1.7 (change 9). This event was reported to Region I Compliance on August 30, 1973 at 1130 hours.

Technical Specification 3.1.7 a states:

a. Average Planar LHGR

During steady state power operation, the average linear heat generation rate (LHGR) of all the rods in any fuel assembly, as a function of average planar exposure, at any axial location shall not exceed the maximum average planar LHGR shown in Figure 3.1.7.

The LPRM's are routinely calibrated following extensive rod manipulations or upon the completion of each full power month. This consists of physically adjusting the gain of each LPRM amplifier by a factor determined thru a computer calculation. Following the physical adjustment of all LPRM amplifiers the Traversing Incore Probe (TIP) system is used to traverse each LPRM string and supply the current axial flux distribution to the computer system. Using this axial flux distribution base and the current LPRM readings along with the other thermal hydraulic parameters, a highly accurate power distribution can then be obtained from the computer.

Prior to the 27th of August, steps were taken to achieve compliance with the fuel densification specification[1] limiting both local LHGR and average planar LHGR within the reactor core and at the same time minimize possible electrical output loss from the station.

[1] Ltr.; Giambusso A.E.C.-P.D. Raymond NMPC - Aug. 24, 1973

Mr. Donald J. Skovholt
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Adjustments in the power distribution were made to obtain an optimum power distribution and power output from the reactor. In conjunction with this, control rods were shifted to move the axial peaks higher in the core into more voided regions and thus flatten the axial power distribution. In order to closely monitor the power distribution, calculations were performed following each step and reactor power was reduced to provide an additional degree of conservatism.

Upon completion of preliminary rod movements on August 26-27, 1973 the new axial flux distributions were supplied to the process computer system via the TIP system. The subsequent calculation of power distribution on August 27, 1973 showed that all bundles were within prescribed limits and the reactor power could be increased. In an attempt to optimize plant power output more control rods were inserted thus increasing the margin between the existing average KW/FT and the limit. Reactor power was then increased using recirculation flow. Due to the fact that more control rods had been manipulated following the last axial flux distribution base supplied to the computer system it was necessary to update these distributions using the TIP system. However due to mechanical problems within the TIP system this was not possible until August 29, 1973. Following the LPRM calibration and inputing of the new axial flux distributions into the computer system a core power distribution was performed. A slight shift in calculated power distribution was noted and four fuel bundle segments were found to be slightly higher in maximum average planar LHGR than the limit prescribed in Figure 3.1.7 of the Technical Specifications. The four fuel bundle segments (reload 1) have a nodal exposure of 1930 MWD/ST and corresponding limit of 10.6 KW/FT (Figure 3.1.7). The four segments were operating .15 KW/FT over this limit. Immediate steps were taken to reduce the maximum average planar LHGR by reducing core thermal power using reactor recirculation flow. Subsequent core power distribution calculations showed all fuel types to be operating within limits shown on Figure 3.1.7.

To prevent reoccurance of this abnormal occurance, the LPRM's will be calibrated once every two full power weeks of operation or twice as often as was previously done. In addition, extension movement of control rods will be done at a substantially lower power level and once assurance to specification 3.1.7 is obtained, power will be slowly increased so as to assure validity of power distribution calculations. This violation is the first of its kind and evaluation of the safety implications of the incident in light of the cumulative experience obtained previously is not applicable. However, due to the degree of conservatism built into the calculations it is felt that no undue hazard would have been presented to the general public even had a LOCA occurred during this period.

Very truly yours,

James Bartlett

James Bartlett
Executive Vice President
Operations and Engineering

JB:cm