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SUBJECT: Responds to 841026 Generic Ltr 84-23 requesting plans for implementing two improvements to water level instrumentation at facility.Vertical leg drop & analog level trip units discussed.

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December 5, 1984

Director of Nuclear Reactor Regulation
Attention: Mr. Domenic B. Vassallo, Chief
Operating Reactors Branch No. 2
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

Dear Mr. Vassallo:

Your Generic Letter 84-23, dated October 26, 1984, requested our plans for implementing two improvements to the water level instrumentation for Nine Mile Point Unit 1. It also described a third improvement to protect against reference leg breaks, which your letter indicated was being evaluated for possible future action. Our responses for the two requested items are attached.

Sincerely,

NIAGARA MOHAWK POWER CORPORATION

for C. V. Mangan
Vice President
Nuclear Engineering and Licensing

JLB/bd
Attachment

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1. Vertical Leg Drop

a. NRC Description:

Improvements to plant(s) that will reduce level indication errors caused by high drywell temperature. These improvements include prevention of reference leg overheating or reduction of the vertical drops in the drywell. (Vertical drop should be measured from the condensation pot to the drywell exit point. Maximum drop would allow an indicated level at the bottom of the normal operating range when actual level is just above lower tap for worst flashing condition.) Those plants for which the vertical drop in the drywell has already been minimized will not have to make additional changes for the drywell heating effect.

b. Niagara Mohawk Response:

Niagara Mohawk has implemented several improvements to reduce potential reactor water level indication errors caused by high drywell temperature conditions. These include 1) adjustment of the triple low reactor water level setpoint for automatic initiation of the Automatic Depressurization System and 2) installation of a fuel-zone reactor water level monitoring system with temperature correction for the vessel level reference leg.

- Adjustment of Reactor Water Level Setpoints:

General Electric identified potential reactor water level indication errors resulting from high drywell temperature in their Service Information Letter 299. It further contained recommendations for evaluating the effect on level as a result of elevated temperatures based on vertical lengths of piping in the drywell. Our evaluation, done in accordance with the guidance provided in the Service Information Letter, concluded that there was a potential error associated with the reactor triple low water level setpoint. At that time, this setpoint was adjusted in a conservative direction reflecting the maximum potential error, and a proposed Technical Specification incorporating the new setpoint was submitted to the Nuclear Regulatory Commission. This amendment request was subsequently approved.

A more detailed description of the analysis that provided the basis for this change in reactor triple low water level setpoint and the reasons why the reactor low and low low water level setpoints need not be changed, was also submitted in our letter of November 26, 1984.

- Fuel Zone Water Level Instrumentation:

  The lowest point at which the reactor water level is normally monitored is the vessel tap for the triple low water level instrumentation discussed above. This tap location corresponds to approximately 4 feet 8 inches above the top of active fuel. In order to monitor reactor water to lower levels an additional monitoring sytem was installed. This system is described in our letter of February 9, 1981. Under appropriate conditions, this system enables reactor water level to be monitored over a range from below the reactor core to the reactor vessel main steam line penetrations. The design of the system incorporates temperature sensing elements of the vessel level reference legs in the drywell for accurate determinations of indicated reactor water level. The modifications and compensating actions are being incorporated into our Emergency Operating Procedures, which are currently being prepared. Thus, the effects of potential errors in the reactor water level indication from elevated drywell temperatures will be minimized.

- Additional Improvement Program:

  Nevertheless, Niagara Mohawk will initiate a program to determine the need to further improve the reactor water level instrumentation in a more fundamental manner based on the information reported in S. Levy, Inc. report, SLI-8211. The first phase of the program will consider worst case flashing conditions, its effects during upset and emergency conditions of concern, and the possible need for equipment changes. The second phase of the program will be carried out with a walkdown of the existing equipment arrangements and an in-situ review of possible needed changes inside the containment, including containment penetrations. This second phase will be done during the next planned refueling outage in the spring of 1986. This is important since any such potential changes would need to be physically verified. After completing these phases, any necessary changes will be the subject of a modification project. Such a modification project, if required, would be included in our forthcoming Integrated Safety Assessment Program for prioritization and scheduling.

2. Analog Level Trip Units

a. NRC Description:

Review of plant experience relating to mechanical level indication equipment. Plant experience shows mechanical level equipment is more vulnerable to failure or malfunction than analog equipment. A number of plants have already connected analog trip units to their level transmitters to improve reliability and accuracy. Those plants that use mechanical level indication should replace the mechanical level indication equipment with analog level transmitters unless operating experience confirms high reliability.

b. Niagara Mohawk Response:

The mechanical trip units for Nine Mile Point Unit 1 were replaced with analog units during the spring 1979 refueling outage. This project was described in our letter of March 27, 1979.