UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

October 26, 1988

Docket No. 50-220

Mr. C. V. Mangan
Senior Vice President
Niagara Mohawk Power Corporation
301 Plainfield Road
Syracuse, New York 13212

Dear Mr. Mangan:

SUBJECT: SAFETY SYSTEM FUNCTIONAL INSPECTION (SSFI) RESTART FINDINGS (REPORT 50-220/88-201)

A special announced team inspection of the activities at Nine Mile Point 1 Nuclear Generating Station was conducted by NRC headquarters and Region I staff during the period September 12, 1988 through October 7, 1988. The team discussed the inspection findings with you and members of your staff during the course of this inspection and at the exit meeting on October 7, 1988. This letter provides a summary of the significant findings in advance of the inspection report (50-220/88-201) so that appropriate corrective actions may be factored into your restart planning activities.

1. The following system functional issues must be resolved before the affected systems are declared operable:

   a. The Technical Specification limiting condition for operation (LCO) which allows continued plant operations for up to seven days with an inoperable core spray sparger may not be appropriate. The analyses (NEDC31446P) conducted in accordance with 10 CFR 50.46 and 10 CFR 50, Appendix K assumed two core spray spargers were available to support the complete spectrum of loss of coolant accidents (LOCAs). This LCO appears to be less conservative than any analyzed single active failure to the core spray system.

   b. Analyses were inadequate and testing of the core spray system did not demonstrate system performance as described in the licensing documents for the following reasons:

      (1) Net positive suction head (NPSH) for the pumps may not be adequate to support the flows expected during large break LOCAs with containment sprays in operation.

      (2) Vortexing analyses did not account for the interactive effects of the two pump suctions which are in close proximity to each other.

      (3) System resistance curves did not account for all the components in the system.

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Enclosure 1

(4) System pump curves did not appear to be controlled or validated by testing over the full range of expected flows.

(5) Potential flow diversion from the reactor through the combined pump discharge relief valve was not considered in any analyses.

c. The core spray system alarm setpoints and procedural responses appeared inappropriate for the following reasons:

(1) The core spray pump low suction and discharge pressure alarms were set at values that would be expected to occur during large break LOCAs and the alarm response directed that the affected pumps be secured even though the system remained operable.

(2) The strainer high differential pressure alarm was set at a value that would be expected to occur during large break LOCAs and the alarm response directed that the affected line be secured even though the system remained operable.

(3) The core spray high pressure alarm was set at a pressure that would be received if the relief valve failed to open prior to system injection and the alarm response was to secure both sets of pumps in the line. This single failure could disable both pump sets in a sparger.

d. The Emergency Operating Procedures (EOPs) did not appear to provide adequate guidance for core spray system operations in the following instances:

(1) The procedure for filling the torus using the core spray system would not work if the core spray system initiation signal was present or the system was in operation. Both of these conditions could be expected during EOP scenarios.

(2) The graphs for cautioning whether pump suction pressure was close to the minimum allowable NPSH or vortexing limits were for individual pumps, but the available flow indication was on the common discharge line for both pump sets.

(3) The limitations for RPV level indication failed to identify that some level instruments shared a common RPV tap with the core spray system and would be unreliable during core spray operation.

e. Analyses were inadequate and testing of the high pressure coolant injection (HPCI)/Feedwater (FW) system did not demonstrate system performance as described in licensing documents for the following reasons:

(1) Independent calculations performed by the team indicated that the condensate and booster pumps would not provide

the flow specified in the Technical Specification Bases at a reactor pressure of 450 psig because of shutoff head limitations.

(2) No analyses existed to support the FSAR statement that electric power for the HPCI/FW system would be available from Bennets Bridge upon a loss of normal site power to the pumps. The team was concerned that the ADS system would initiate before the HPCI/FW system would be available.

(3) No analysis was provided to show that necessary water levels in the condensate storage tank could be adequately transferred to the hotwell without vacuum to support HPCI/FW pumps flows.

(4) The pump curves used for HPCI/FW testing appeared to be uncontrolled, limited to the motor-driven feedwater pumps (excluding the booster and condensate pumps), and failed to account for a modification which changed impellers to ones with different operating characteristics.

f. The design of the core spray keep fill system did not appear to prevent water hammer throughout the system and existing testing did not ensure that water hammer would not occur under certain LOCA conditions.

g. The use of "Furmanite" to repair HPCI/FW manual isolation valve 30-10 appeared to be excessive, performed without adequate analyses and may not be a suitable repair to support plant startup.

h. The range of control room flow instrumentation for the core spray system was not adequate to measure the full range of expected system flows.

i. The motor-driven feedwater pumps were not designed to support the frequent starting that may be required by HPCI/FW system reactor water level control modifications and operating procedures.

2. The following programmatic concerns are provided for your early initiation of corrective action before the inspection report is issued and your evaluation of whether they require correction before changing operational modes:

a. Examples were found where Surveillance Test Program data collection, results review and acceptance value determination would not adequately support system operability decisions.

b. Internal responses to industry information such as NRC Information Notices, GE Service Information Letters and INPO information did not always appear to be timely or sufficiently researched.

c. Investigation into problems and assessment of reportability in accordance with 10 CFR 50.72 and 10 CFR 50.73 did not always appear to be adequate.

d. The written periodic maintenance program did not include all recommended maintenance activities of the equipment vendor manuals or the actual periodic maintenance being performed on safety systems during the outage.

e. Non-licensed operator training did not include a programmed topic for the determination of valve position locally. This issue was previously identified during Inspection Report 50-410/88-10 for Nine Mile Point, Unit 2.

f. The QA audit program concentrated on programmatic issues and would not necessarily be able to identify significant technical issues with safety system operation, testing, design or maintenance.

g. Several material deficiencies were identified by the team during their walkdown of the systems which had not been previously identified, evaluated and prioritized for correction.

The findings listed above are the more significant concerns identified during the inspection and provide neither a complete list of inspection concerns nor any of the strengths identified by the inspection team. A complete list of inspection findings will be provided in Inspection Report 50-220/88-201.

In anticipation of the inspection report, please respond with your proposed corrective actions to the individual functional concerns listed above in paragraph 1. This written response will be considered as part of our review of your readiness to restart. Additionally, a meeting will be scheduled during the week of November 14, 1988 in our Rockville, MD office to discuss your preliminary plans. Please remember that the SSFI only concentrated on the HPCI/FW and core spray systems. At the NRC meeting please be prepared to discuss the other systems you will review and the methods, schedule and personnel you will use to accomplish the reviews.

Sincerely,

Steven A. Varga

Steven A. Varga, Director
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