April 17, 1984

Docket No. 50-220

Mr. G. K. Rhode
Senior Vice President
Niagara Mohawk Power Corporation
300 Erie Boulevard West
Syracuse, New York 13202

Dear Mr. Rhode:

SUBJECT: NUREG-0737, ITEM II.B.3
POST-ACCIDENT SAMPLING SYSTEM (PASS)

Re: Nine Mile Point Nuclear Station, Unit No. 1

We have completed our review of the additional information provided in your letter of March 8, 1984 regarding the above subject. Our evaluation is enclosed.

In our evaluation of January 12, 1984, we found that seven of the eleven review criteria of Item II.B.3 were fully satisfied. We have reviewed the additional information provided on the four review criteria that were previously found partially satisfied and, now, find the criteria have been met. Therefore, since all criteria are met, we find that the Post-Accident Sampling System is acceptable.

Sincerely,

Original signed by/

Domenic B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing

Enclosure:
Safety Evaluation

cc w/enclosure:
See next page

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Mr. G. K. Rhode
Niagara Mohawk Power Corporation
Nine Mile Point Nuclear Station, Unit No. 1

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

NINE MILE POINT NUCLEAR STATION, UNIT NO. 1

NIAGARA MOHAWK POWER CORPORATION

DOCKET NO. 50-220

POST-ACCIDENT SAMPLING SYSTEM (NUREG-0737, ITEM II.B.3)

Introduction

Based on our evaluation of the Post-Accident Sampling System (PASS), we previously concluded in the SER that seven of the eleven criteria were acceptable.

The following criteria remained unresolved:

Criterion (2) Provide a core damage estimate procedure to include radionuclide concentrations and other physical parameters as indicators of core damage.

Criterion (3) Verify that PASS valves which are not accessible after an accident are environmentally qualified for the conditions in which they need to operate.

Criterion (10) Provide information demonstrating applicability of procedures and instrumentation in the post-accident water chemistry and radiation environment; and calibration, testing and retraining of operators on semi-annual basis.

Criterion (11) Demonstrate the capability of obtaining representative reactor coolant samples from the reactor vessel and suppression pool. Also, provide information regarding heat tracing of containment atmosphere sample lines.

By letter dated March 8, 1984, the licensee provided additional information.

Evaluation

Criterion (2):

The licensee shall establish an onsite radiological and chemical analysis capability to provide, within the three-hour time frame established above, quantification of the following:

a) Certain radionuclides in the reactor coolant and containment atmosphere that may be indicators of the degree of core damage (e.g., noble gases, iodines and cesiums, and non-volatile isotopes);

b) hydrogen levels in the containment atmosphere;

c) dissolved gases (e.g., H_2), chloride (time allotted for analysis subject to discussion below), and boron concentration of liquids;

d) Alternatively, have in-line monitoring capabilities to perform all or part of the above analyses.

The licensee has provided a plant specific procedure to estimate the degree of core damage based on radionuclide measurements using the PASS and other plant parameters including containment radiation level, containment hydrogen concentrations, and reactor vessel water level. We have reviewed this procedure and find that it meets the provisions of Criterion (2) of NUREG-0737 of Item II.B.3 and is, therefore, acceptable.

Criterion (3):

Reactor coolant and containment atmosphere sampling during post-accident conditions shall not require an isolated auxiliary system (e.g., the letdown system, reactor water cleanup system) to be placed in operation in order to use the sampling system.

Reactor coolant and containment atmosphere sampling during post-accident conditions does not require an isolated auxiliary system to be placed in operation in order to perform the sampling function. The PASS valves which are not accessible after an accident will be environmentally qualified for the conditions in which they need to operate in accordance with the implementation of 10 CFR 50.49 equipment qualification requirements. We find that these provisions meet Criterion (3) and are, therefore, acceptable.

Criterion (10):

> Accuracy, range, and sensitivity shall be adequate to provide pertinent data to the operator in order to describe radiological and chemical status of the reactor coolant systems.

The accuracy, range, and sensitivity of the PASS instruments and analytical procedures are consistent with the recommendations of Regulatory Guide 1.97, Rev. 2, and the clarifications of NUREG-0737, Item II.B.3, Post-Accident Sampling Capability, transmitted to the licensee on July 26, 1982. Therefore, they are adequate for describing the radiological and chemical status of the reactor coolant. The analytical methods and instrumentation were selected for their ability to operate in the post-accident sampling environment. The standard test matrix and radiation effect evaluation indicated no interference in the PASS analyses. The equipment and procedures used for the Pass will be tested or calibrated to maintain a high level of reliability. Training of operators will be conducted at a frequency that will insure their competence. Hands on training will be conducted at least twice a year and the PASS will be utilized during emergency drills. We determined that these provisions meet Criterion (10) of Item II.B.3 in NUREG-0737, and are, therefore, acceptable.

Criterion (11):

> In the design of the post-accident sampling and analysis capability, consideration should be given to the following items:

a) Provisions for purging sample lines, for reducing plateout in sample line, for minimizing sample loss or distortion, for preventing blockage of sample lines by loose material in the RCS or containment, for appropriate disposal of the samples, and for flow restrictions to limit reactor coolant loss from a rupture of the sample line. The post-accident reactor coolant and containment atmosphere samples should be representative of the reactor coolant in the core area and the containment atmosphere following a transient or accident. The sample lines should be as short as possible to minimize the volume of fluid to be taken from containment. The residues of sample collection should be returned to containment or to a closed system.

b) The ventilation exhaust from the sampling station should be filtered with charcoal adsorbers and high-efficiency particulate air (HEPA) filters.

The licensee will specify maintaining water level above the normal scram setpoint (moisture separator level) after an accident to ensure continued natural circulation and representativeness of samples taken off the recirculation loop. The PASS does provides the capability to sample from the liquid poison sparger which is directly under the core. Samples from the sparger should be representative of core conditions. To limit iodine plateout, the containment atmosphere sample line is heat traced. The PASS system is equipped with a HEPA and charcoal absorber ventilation system. We determined that these provisions meet Criterion (11) and are, therefore, acceptable.

Conclusion

On the basis of our evaluation, we now conclude that the Post-Accident Sampling System meets all the criteria of Item II.B.3 in NUREG-0737, and is, therefore, acceptable.

Principal Contributor: F. Witt
Dated: April 17, 1984