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NED-84-235

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Director of Nuclear Reactor Regulation
Attention: Mr. John F. Stolz, Chief
Operating Reactors Branch No. 4
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

NRC DOCKETS 50-321, 50-366
OPERATING LICENSES DPR-57, NPF-5
EDWIN I. HATCH NUCLEAR PLANT UNITS 1, 2
NUREG-0737 ITEM II.B.3 POST-ACCIDENT SAMPLING CAPABILITY

Gentlemen:

Our submittal dated January 26, 1984 provided information demonstrating the degree to which Plant Hatch complied with the criteria of NUREG-0737, Item II.B.3. In a March 13, 1984 telephone conference, Georgia Power Company was requested to submit additional information regarding certain criteria. In response to that request, Enclosure 1 is submitted.

Please contact this office if there are any questions.

Very truly yours,

L. T. Gucwa

L. T. Gucwa

JH/mb

Enclosure

xc: J. T. Beckham, Jr.
H. C. Nix, Jr.
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Senior Resident Inspector

A046
1/1

ENCLOSURE 1

EDWIN I. HATCH NUCLEAR PLANT UNITS 1 AND 2

POST-ACCIDENT SAMPLING CAPABILITY

I. INTRODUCTION

Post-accident sampling and analysis capability in accordance with NUREG-0737 Item II.B.3 is being provided by previously existing in-line containment hydrogen and oxygen analyzers in conjunction with the Post-Accident Sampling System (PASS). Georgia Power Company's January 26, 1984 submittal provided detailed information regarding compliance with the criteria of Item II.B.3. The information provided herein supplements the January 26, 1984 submittal in response to NRC concerns in the following areas:

A. Representative sampling;

B. Instrument range and accuracy;

C. Personnel radiation exposure; and

D. Core damage estimation.

II. ADDITIONAL INFORMATION

A. REPRESENTATIVE SAMPLING

Reactor coolant samples are obtained from a jet pump flow-sensing instrument line over the entire range of primary system pressures. While some BWR licensees have found it necessary to utilize an RHR system tap for sampling at low pressure, this was not necessary for Plant Hatch because sufficient motive force for sample flow is provided by the PASS sample pump and the elevation drop of the sample lines.

Samples taken from the jet pump location will be representative of coolant in the core because a direct path will always exist from the core region to the sample tap. For the case of a small break or no break, reactor water level will be maintained at or near the normal level. In the absence of forced reactor recirculation flow, operators will be instructed by procedures to maintain reactor water level high enough to ensure natural circulation. The flow of water up through the core then down past the tap from which the PASS sample is taken will ensure that the sample is representative of coolant in the core.

In the case of a large break, water supplied by the Core Spray system will flow down through the core then up through the jet pumps past the tap from which the PASS sample is taken. Again, flow past the sample tap directly from the core will ensure that the sample is representative of core conditions.

Representative samples of drywell atmosphere will be assured by heat tracing maintaining an environment of approximately 250°F in the sample lines which will prevent condensation and plateout.

B. INSTRUMENT RANGE AND ACCURACY

Tables 1, 2 and 3 provide summaries of the instrument ranges and accuracies for the analyses required by Item II.B.3. The accuracies are based on the results of factory tests. Analyses which are potentially sensitive to chemical interference (Boron and Chloride) were tested using the NRC test matrix. The testing did not account for radiation effects; however, the instruments in use were designed to withstand a total integrated dose of 10^7 rads with no loss of accuracy.

TABLE 1

PASS REACTOR COOLANT ANALYSES

ANALYSIS	RANGE	ACCURACY
Gross Radioactivity	$10^{-1}\mu$Ci/ml-10 Ci/ml	<Factor of 2
Gamma Spectrum	Isotopic	<Factor of 2
Boron	100-6500 ppm	+15.4,-40.6 ppm
Chloride	0.1-20 ppm	<0.5 ppm: +0.4,-0.07 ppm 0.5-20 ppm: +18%,-4.8%
Dissolved Hydrogen	0-100 Vol %	$\pm$2% of Full Scale

TABLE 2

PASS DRYWELL ATMOSPHERE ANALYSES

ANALYSIS	RANGE	ACCURACY
Gross Radioactivity	$10^{-3}\mu$Ci/ml-$10^5\mu$Ci/ml	<Factor of 2
Gamma Spectrum	Isotopic	<Factor of 2

TABLE 3

CONTAINMENT ATMOSPHERE MONITORING

ANALYSIS	RANGE	ACCURACY
Hydrogen Content	0-10/0-30 Vol %	$\pm$5%

C. PERSONNEL RADIATION EXPOSURE

The majority of post-accident sampling and analysis operations are remotely controlled from low radiation areas, resulting in negligible radiation exposures. Only in the case of failure of in-line analysis capability would it be necessary to enter the Post-Accident Sample Room (PASR) for grab sampling and incur significant radiation exposure.

The maximum individual radiation exposure for the grab sampling operation has been calculated using the following conservative assumptions:

1. Regulatory Guide 1.3 source terms are used.

2. Sampling is performed 24 hours following onset of the accident.

3. Purging of equipment and lines prior to sample room entry would reduce dose rates by a factor of ten.

4. A six minute entry into the PASR is required. This estimate is based on testing experience.

The calculation results in a maximum dose rate in the PASR of 15.1 Rem/hr and a maximum individual whole body dose of 1.51 Rem. While this exposure estimate is within the NUREG-0737 criterion, it should be noted that in an actual accident situation, grab sampling would be preceded by extensive surveys and ALARA analysis to minimize radiation exposure.

D. CORE DAMAGE ESTIMATION

A procedure for estimating the extent of core damage based on radionuclide concentrations and other plant parameters has been implemented at Plant Hatch. The procedure is based on the generic methodology developed by General Electric in NEDO-22215. A copy of the procedure, HNP-4848, was transmitted to the NRC by our letter dated February 10, 1984.

The numerical factors in Section D of HNP-4848 are the result of Hatch-specific modifications to the reference data in NEDO-22215. These factors were derived per Appendix A guidance to account for differences between Plant Hatch and the "reference plant". The guidance in Notes A and B of the Appendix was used in generating these factors for the Plant Hatch procedure.