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December 21, 1982

Mr. B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Perry Nuclear Power Plant
Docket Nos. 50-440; 50-441
Confirmatory Issue Nos. 41 and 42
Effluent Treatment Systems Branch

Dear Mr. Youngblood:

This letter and its' attachments are provided in response to the Perry Nuclear Power Plant (PNPP) SER confirmatory issues numbered 41 and 42 regarding the design for noble gas effluent monitors and the design for sampling and analysis of plant effluents. These items further address TMI Action Items II.F.1.1 and II.F.1.2 respectively, and will be incorporated into a future FSAR amendment.

We believe that this information should resolve these confirmatory issues in the next Supplementary Safety Evaluation Report.

If you have any questions, please contact me.

Very truly yours,

Murray R Edelman

Murray R. Edelman
Vice President
Nuclear Group

MRE:mb

cc: Jay Silberg, Esq.
John Stefano
Max Gildner
Phillip Stoddard

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Confirmatory Issue No. 41: Design for noble gas effluent monitors to TMI Action Plan Item II.F.1.1.

RESPONSE

In accordance with TMI Action Plan Item II.F.1.1, Noble Gas effluent monitors will be installed at the PNPP that meet the criteria of Table II.F.1.1 of NUREG-0737. To accomplish the above action, PNPP has developed an equipment design specification and is currently evaluating vendor proposals to manufacture and supply the subject monitors.

Multiple monitors as described in the Perry Nuclear Power Plant design specification will be installed at the three environs release vents of the plant. The specific points of sampling are at the Main Plant Vent, Turbine Building Heater Bay Vent, and the Off-Gas Building Vent. These monitors, as installed, will extend the range for detecting Noble Gas fission products from 10^{-6} µCi/cc to 10^{5} µCi/cc (Xe-133). Noble Gas effluent monitors currently installed at the Perry Nuclear Power Plant have a detectable range of 10^{-6} µCi/cc to 10^{-2} µCi/cc (Xe-133). The multiple monitors to be added will be designated as Intermediate and High Range. The Intermediate range monitor will span 10^{-3} µCi/cc to 10^{2} µCi/cc (Xe-133). The High range monitor will cover a range from 10^{1} µCi/cc to 10^{5} µCi/cc (Xe-133). A one decade overlap will thus be provided between the current installed monitoring system and the new monitors to be added.

The multiple monitors in the Perry Nuclear Power Plant's design specification are designated as Seismic Category I, Safety-Related. To ensure continuous monitoring of Noble Gas effluents during and after accident conditions, the multiple monitors will be designed in accordance with the Perry Nuclear Power Plant's Equipment Qualifications Program. Divisional Class 1E AC power with diesel back-up power will be provided to each monitor.

Additional design criteria as specified in Table II.F.1.1 of NUREG 0737 is reflected in the Perry Nuclear Power Plant's equipment specification. The Perry Nuclear Power Plant will have available for review these conformance items of NUREG-0737 subsequent to vendor contract award and development of a final vendor conformed specification.

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Confirmatory Issue No. 42: Design for sampling and analysis of plant effluents to TMI Action Plan II.F.1.2.

RESPONSE

In accordance with TMI Action Plan Item II.F.1.2, Effluent Particulate and Iodine Sampling Systems with onsite analysis capability will be provided at the Perry Nuclear Power Plant that meet the criteria of Table II.F.1.2 of NUREG-0737.

A design specification for the subject sampling systems has been developed and the equipment is currently being manufactured to meet the requirements specified therein.

Design Description

1. A sampling system for collection of gaseous radioiodines and particulates will be installed at each of three Perry Nuclear Power Plant environs release vents.

   The specific points for sampling are the Main Plant Vent, Turbine Building Heater Bay Vent, and Off-Gas Building Vent.

2. Each sampling system is designed to provide collection of iodine and particulate activity levels up to 10^2 µCi/cc. This will be accomplished by utilizing three sets of filter cartridges in parallel, with 30 minute continuous sampling on one set (primary) and adjustable timed sampling on the remaining two sets.

3. Silver zeolite filter cartridges and mixed fiber filter cartridges (Type HV-70) will be used as the sampling media for iodine and particulate collection respectively. Separation of the iodine and particulate collection cartridges is reflected in the actual system design to facilitate handling and isotope analysis.

4. Each collection cartridge will be enclosed in a 4π lead shield to minimize exposure to operating personnel. Shielding of the primary set of filter cartridges is based on iodine and particulate activity levels up to 10^2 μCi/cc and 30 minute continuous sampling. Shielding of the second and third sets of filter cartridges is based on activity levels up to 10^2 μCi/cc and shorter sampling times. The maximum dose attributable to the primary set of collection cartridges will be less than 600 mR/hr. at one foot from the shield surface. The maximum dose rates resultants from shielding of the second and third sets of collection cartridges is approximately 40 mR/hr. and 4.4 mR/hr. from the shield surfaces respectively.

5. Representative sampling to each system will be provided by use of isokinetic nozzles in accordance with ANSI N13.1-1969. Isokinetic conditions in the sampling system will be maintained within ±20% with respect to stack or duct flow.

6. The collection cartridges as designed in the system will be removed manually by operating personnel upon termination of sampling. The maximum dose to operating personnel during the removal process is approximately 50 mR/hr. for worst case collection conditions. A shielded transport cast will be used by operating personnel where practical to transport the cartridges to the Technical Support Center (TSC) analysis facility.

7. Health Physics operating personnel will utilize a Gamma Spectrometer in the TSC to analyze the collection cartridges for specific isotopes. Using the results of this analysis and the Perry developed offsit dose calculation manual, operating personnel will determine the quantitative release of radioiodines and particulates for dose calculation and assessment.

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