

NORTHEAST UTILITIES



The Northeast Utilities Group consists of the following companies: Connecticut Yankee Nuclear Energy Corporation, Millstone Nuclear Power Station, Inc., and the Connecticut Yankee Atomic Power Company. All are equal partners in the NEUECO, Inc. The NEUECO is a subsidiary of the Northeast Utilities Group.

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Docket Nos. 50-213
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50-336
A01551



Mr. Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Reference: (1) W. G. Council letter to D. G. Eisenhut, dated December 31, 1980.

Gentlemen:

Haddam Neck Plant
Millstone Nuclear Power Station, Unit Nos. 1 and 2
TMI Action Plan Item II.F.1; Effluent Monitors

By teletcopy received on July 28, 1981, the NRC Staff identified several deviations from the requirements of NUREG-0737 in the design of the noble gas effluent monitors at the Haddam Neck Plant and Millstone Unit Nos. 1 and 2. These deviations were subsequently discussed between members of our respective staffs and the following additional information is hereby provided by the Connecticut Yankee Atomic Power Company (CYAPCO) on behalf of the Haddam Neck Plant and the Northeast Nuclear Energy Company (NNECO) on behalf of Millstone Unit Nos. 1 and 2, to facilitate your review of the respective noble gas effluent monitor designs.

To provide reasonable assurance that the samples collected from the Millstone Unit No. 2 vent-stack are representative of direct flow for a given situation, the NRC Staff requested NNECO to provide design details and a discussion of the sampler to be installed in the Millstone Unit No. 2 vent-stack.

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The Millstone Unit No. 2 vent stack is a rectangular sheet metal stack with dimensions of 114 inches by 48 inches. The elevation of the nearest major transition to the effluent monitor nozzle assembly is 52 feet. The elevation of the nozzle assembly will be approximately 89 feet, 4 inches which, using 114 inches as a conservative stack diameter, is located approximately four stack diameters downstream of this transition. In addition to the nozzle assembly location, the assembly is composed of five sample points which traverse the 48 inch length of the stack.

The Millstone Unit No. 2 condenser air removal system exhausts to the Millstone Unit No. 1 stack. Both the Enclosure Building Filtration System, which processes leakage from the containment following a LOCA, and the Auxiliary Exhaust System, which ventilates the fuel handling area, exhaust to the Millstone Unit No. 1 stack during emergency conditions.

NNECO concludes that the location and design of the noble gas effluent sample assembly at Millstone Unit No. 2 will ensure that a representative sample will be obtained.

In response to the Staff's concerns related to the calibration of the noble gas effluent monitors at Millstone Unit No. 1 and 2, the following is provided.

The noble gas effluent monitors to be installed at Millstone Unit Nos. 1 and 2 are type test calibrated using Xenon 133 at each decade from 5×10^{-2} to $10^5 \mu\text{Ci/cc}$. In addition, a type test energy dependence calibration is performed using Krypton 85 and Argon 41. This procedure complies with the guidance contained in NUREG-0737.

NUREG-0737 requires the noble gas effluent monitors to range to $10^5 \mu\text{Ci/cc}$ for noble gas effluents from the condenser air removal system. In Reference (1), both CYAPCO and INNECO described the designs for the noble gas effluent monitors at the Haddam Neck Plant and Millstone Units, respectively. It was noted that the maximum range for these instruments would be $10^4 \mu\text{Ci/cc}$. This was based on the fact that a dilution factor of greater than ten exists for the condenser air ejector effluents at both the Haddam Neck Plant and at Millstone Unit Nos. 1 and 2. In response to the Staff's concerns related to this deviation, the following is provided. The new high range noble gas effluent monitors at Millstone Unit Nos. 1 and 2 range from 5×10^{-2} to $10^5 \mu\text{Ci/cc}$ and are calibrated as described above. This insures adequate overlap with the existing normal range effluent monitors. The noble gas effluent monitor to be installed at the Haddam Neck Plant has a range of 10^{-7} to $10^5 \mu\text{Ci/cc}$. Therefore, the requirements of NUREG-0737 will be met at the Haddam Neck Plant and Millstone Unit Nos. 1 and 2.

In the July 28, 1981 telecopy, the Staff requested additional justification for the sampling conditions in the Millstone Unit Nos. 1 and 2 stacks. In response to this request, INNECO provides the following.

The flow in the Millstone Unit No. 1 stack can vary from 0 to approximately 200,000 SCFM and the flow in the Millstone Unit No. 2 vent stack can vary from 0 to 96,000 SCFM. There is presently no known process radiation monitor which can provide auto-isokinetic sampling throughout the entire flow range. Additionally, all release pathways of significance contain HEPA (High Efficiency Particulate Air) filters such that the release of particulates is expected to be insignificant. This is especially true for large particulates for which isokinetic sampling is important. Finally, the only significant dose pathway for particulates is through the ingestion pathway. Dose estimates and corrective actions for these pathways will be based on field sample results due to the large uncertainties in deposition models. Hence, stack particulate monitoring is not a vital parameter for post-accident assessment. As such NNECO maintains that the current noble gas effluent monitor design at both Millstone Unit Nos. 1 and 2 will provide for realistic sampling as well as minimization of over-estimation of particulate releases.

We trust this information adequately disposes the Staff's concerns, and is sufficient to conclude that the designs for the Haddam Neck Plant and Millstone Unit Nos. 1 and 2 conform to all applicable criteria of NUREG-0737. The current installation schedule complies with the date required by NUREG-0737, January 1, 1982.

Very truly yours,

CONNECTICUT YANKEE ATOMIC POWER COMPANY
Northeast Nuclear Energy Company



W. G. Council
Senior Vice President