LONG ISLAND LIGHTING COMPANY
SHOREHAM NUCLEAR POWER STATION
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SNRC-1254

MAY 0 6 1986

Dr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Alternate Method for Quantification of Radioactive Particulates and Iodines in Effluent Streams During and Following an Accident
Shoreham Nuclear Power Station - Unit 1
Docket No. 50-322

Reference 1. NUREG-0737, Clarification of TMI Action Plan Requirements, October 1, 1980
2. NRC Inspection Report 50-322/85-04 Item 85-04-12

Dear Mr. Denton:

Item II.F.1, Attachment 2 of Reference 1, "Sampling and Analysis of Plant Effluents", requires that nuclear power plants have design and operational capability to continuously collect and analyze representative samples of radioactive particulates and iodines (P&I) in plant gaseous effluents during and following an accident while not exceeding the exposure criteria of 10 CFR 50 Appendix A, General Design Criterion 19 (GDC 19). The NRC, in Table II.F.1-2 of NUREG 0737, recognizes that "Highly radioactive samples may not be compatible with generally accepted analytical procedures..." With that in mind, this letter describes LILCO's proposed method to be used at Shoreham to quantify releases of radioactive iodines and particulates when the excessive dose rates from filters containing samples to be analyzed preclude normal measurement techniques. This method is an alternate to that described in the SNPS Final Safety Analysis Report.

The Shoreham high range effluent monitors have been designed to accommodate the 200 uCi/cc effluent stream and thirty minute sampling times, as required by Table II.F.1-2 of Reference 1. These monitors have been designed with isokinetic sampling nozzles and comply to the maximum extent practical with ANSI N13.1-1969 in order to ensure representative sampling of particulates in the effluent stream.

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A time-and-motion study has been performed which verifies that plant personnel can remove samples, replace sampling media and transport samples to the onsite analysis facility with radiation exposures that are not in excess of GDC 19 criteria (5 rem whole body and 75 rem extremity exposure).

However, the very high source term precludes measurement of these thirty minute samples using the gamma spectrometer. Therefore, a plan has been devised whereby a P&I sample can be collected (using the normal equipment) for short intervals which would vary with the source term. The resulting dose rate from these samples is sufficiently low that they can be counted on the normal gamma spectrometer.

The method requires that gas and P&I samples are taken at the same time that the gas monitor reading is noted. Both the gas and P&I samples are measured on the gamma spectrometer and the specific activity for each radionuclide is related mathematically to the monitor reading at the time of sampling. Thereafter, all determinations of P&I in the effluents are calculated based on the continuous monitor readout. New gaseous and P&I samples would be taken and analyzed whenever plant conditions changed, when there was good reason to suspect that the isotopic mixture had changed, or, at least, once per day during the emergency. The shortest time in which representative sampling can be achieved after opening of the valve which directs sample to a new filter is 10.8 seconds.

This method permits continuous quantification of radioactive particulates and iodines while conserving personnel radiation exposure.

Your approval of this method is requested by June 6, 1986, so that LILCO can quickly take the necessary steps to close the inspection report item (Ref. 2). In accordance with the requirements of 10 CFR 170.21, LILCO enclosed a $150.00 check covering the prescribed application fee for this approval request.

If there are any questions, please contact this office.

Very truly yours,

John D. Leonard, Jr.

John D. Leonard, Jr.
Vice President - Nuclear Operations

PGP:ck

cc: R. Caruso
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