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December 13, 1984
EF2-72030

Director of Nuclear Reactor Regulation
Attention: Mr. B. J. Youngblood
Licensing Branch No. 1
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

References: 1. Fermi 2
NRC Docket No. 50-341

2. Detroit Edison to NRC Letter, "Action Plan for Completing NRC Open Items Related to PRMS and PASS", EF2-70036 dated October 31, 1984.

3. Detroit Edison to NRC Letter, "Clarification of Position Regarding NUREG-0737 Post-Accident Sampling and Monitoring Capabilities", EF2-72006 dated November 1, 1984.

4. USNRC Region III Inspection Report No. 50-341/84-27, dated August 10, 1984.

Subject: Additional Clarification of Position Regarding NUREG-0737 Post-Accident Sampling and Monitoring Capabilities

Dear Mr. Youngblood:

The reference (3) submittal contains several items identified by Detroit Edison for your review and concurrence. The purpose of this letter is to identify an additional 5 items relating to NUREG-0737 Post-Accident Sampling and Monitoring Capabilities which also require your review and concurrence. The items are summarized as follows:

a. Enclosure 1: Empirical Determination of Sample Line Loss Correction Factors

b. Enclosure 2: Effluent Radiation Monitors - Main Control Room Displays

c. Enclosure 3: Heat Tracing of SGTS Sample Lines

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d. Enclosure 4: Location of Containment Area High Range Monitoring System (CAHRMS) Detectors

e. Enclosure 5: Isokinetic Conditions

If you have any further questions please contact Mr. O. K. Earle (313) 586-4211.

Sincerely,

Wayne H. Jens

Enclosures

cc: All with Enclosures
Mr. P. M. Byron
Mr. C. Gill
Mr. L. Heuter
USNRC, Document Control Desk
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ENCLOSURE 1

EMPIRICAL DETERMINATION OF SAMPLE LINE LOSS CORRECTION FACTORS

NRC Region III raised the following concern during a previous inspection (1):

> The licensee has not yet arrived at correction factors for sample line losses due to iodine plateout and particulate deposition. As clarified in footnote 12 of Table 3 of Regulatory Guide 1.97 (Revision 3), "collection of representative samples" means obtaining the best samples practicable given the exigencies that attend the accident environments. Line losses or line deposition should be empirically pre-determined and appropriate loss correction factors should be applied.

It has been noted by Detroit Edison that NUREG-0737 does not contain a specific requirement or recommendation for empirically determining sample line loss correction factors. In addition, Detroit Edison's commitments (in the Fermi 2 FSAR) refer to Revision 2 of Regulatory Guide 1.97.

Detroit Edison has reviewed a recent article relating to the plateout of radioiodine in sample lines (2). Included in this article is a method for calculating potential sample line losses for various iodine chemical species. Detroit Edison has used this method to estimate expected iodine sample line losses of approximately 10%.

One assumption which was used in estimating the iodine sample line loss regarded the anticipated distribution of iodine chemical species. The basis for this assumption was taken from an EPRI study of BWR radioiodine sources (3). It is noted that this study refers to routine operating conditions. However, no credible reference could be found with regards to the distribution of radioiodine chemical species expected during accident conditions.

In addition, Detroit Edison has calculated expected particulate sample line losses using the methods described in ANSI N13.1 (4). These line losses are estimated at less than 20%.

Sample line loss correction factors, based upon these calculated values, are being incorporated into related procedures.

Detroit Edison has agreed to develop a test scope for empirically determining sample line losses prior to March 31, 1985 (5). In addition to selecting an acceptable and cost-effective test method, an evaluation is being made regarding the applicability of test results, in light of the lack of quantitative data regarding iodine chemical species and particulate size distribution expected during design basis accident conditions. A decision regarding the actual performance of the test will be based upon sound engineering and economic considerations.

In summary, it is Detroit Edison's position that the existing system design and procedures, taking into account the above comments, meet the commitments to NUREG-0737 with regards to representative sampling of radioiodines and particulates.

(1) USNRC Region III Inspection Report No. 50-341/84-27, Dated August 10, 1984.

(2) M. T. Kabat, Deposition of Airborne Radioiodine Species on Surfaces of Metals and Plastics, Proceedings of the 17th DOE Air Cleaning Conference, 1982.

(3) EPRI NP-495, Sources of Radioiodine at Boiling Water Reactors, prepared by Science Applications, Inc., February 1978.

(4) ANSI N13.1-1969, Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities.

(5) Detroit Edison to NRC Region Letter, "Action Plan for Completing NRC Open Items Related to PRMS and PASS," EF2-70036 Dated October 31, 1984.

ENCLOSURE 2

EFFLUENT RADIATION MONITORS-MAIN CONTROL ROOM DISPLAYS

A permanent waiver is requested from NUREG-0737, Item II.F.1, Attachment 1 which requires the monitor display and recording be in terms of uCi/cc of Xe-133 equivalent or actual noble gas mix.

The waiver is requested to acknowledge the acceptability of main control room displays which include:

1. An on-demand digital display for the Eberline System Particulate, Iodine and Noble Gas (SPING) monitors and AXM accident monitors capable of reading uCi/cc of "pseudo noble gas"* for each of the two noble gas channels. (Three noble gas channels on the SPING-4, Reactor Building Exhaust Plenum).

2. Recording by digital data system of detector readings in uCi/cc of pseudo noble gas.

The weighted sensitivities to this "pseudo noble gas" will be programmed into the Eberline microprocessor as uCi/cc of Xe-133 equivalent.

Calculations in the microprocessor using channel sensitivity and counts per minute will yield uCi/cc of "pseudo noble gas". The digital display located in the control room will be able to retrieve from the microprocessor the following information:

1. Counts per minute

2. Concentration of "pseudo noble gas" (uCi/cc).

This waiver is requested because the offsite dose assessment models used by Detroit Edison for accident cases are based on effluent noble gas monitor readings of "pseudo noble gas" (as Xe-133 equivalent). The models provide the capability to include the time dependence required to account for the decay of the actual mix relative to the "pseudo noble gas".

Radiological Emergency Response Preparedness (RERP) Implementing Procedure EP-540, "Manual Off-Site Radiological Dose Assessment Calculational Procedure - Airborne Releases - Overview" uses a series of curves of release rate of Xe-133

*"Pseudo noble gas" at Fermi 2 is defined as the isotopic mix of the weekly grab sample of noble gases calculated as Xe-133 equivalent.

equivalents which are calculated from post-LOCA noble gas mix, conversion factors and, in some cases, sample analyses to correlate effluent monitor readings to an estimated noble gas release rate following an accident. This procedure was found acceptable as noted in NUREG-0798, Supplement 4, Section 13.3.2.9.

The computerized model, an integral part of the Emergency Response Information System (ERIS), also incorporates the use of the "pseudo noble gas" as Xe-133 equivalent and performs the required calculations to provide release rate based on default isotopic mixes or actual sample analyses.

A permanent waiver is requested.

ENCLOSURE 3

HEAT TRACING OF STANDBY GAS TREATMENT SYSTEM (SGTS)
SAMPLE LINES

Installation, preoperational testing, procedures and training in the use of the SGTS sampling and monitoring equipment is complete. The SGTS sample lines will be heat traced to enhance the post-accident sampling capabilities of the equipment. This heat tracing will be completed prior to exceeding 5% power. A waiver is requested.

ENCLOSURE 5

ISOKINETIC CONDITIONS

Detroit Edison has installed isokinetic probes which sample the radioactive gaseous effluent releases from the Fermi 2 plant. Due to the balancing of the heating, ventilation, and air conditioning (HVAC) system, and physical changes in building pathways currently taking place, flows in these effluent stacks and ducts are changing. These changes yield depar-tures from isokinetic conditions as initially designed.

As changes in the HVAC system continue, Detroit Edison has set up a program to measure effluent flows periodically. These data will be evaluated and sample flows will be changed if necessary to maintain reasonable isokinetic conditions per ANSI N13.1-1969. This program will remain in affect for a minimum of one year, at which time it is predicted that the flows will have stabilized.

The above is submitted for clarification of Detroit Edison's planned effort for maintaining isokinetic conditions.

ENCLOSURE 4

LOCATION OF CONTAINMENT AREA HIGH RANGE MONITORING SYSTEM (CAHRMS) DETECTORS

The CAHRMS detectors at Fermi 2 are located in the drywell. Radial placement has positioned the detectors at approximately 6-7 feet from the sacrificial shield wall. The present location of the CAHRMS is considered to be optimum when considering the large amount of equipment, structures, and piping in the drywell.

The locations of the CAHRMS monitors are presently being evaluated taking into account the as-built geometry in the drywell and the instrument calibration factors for gamma ray energy. If necessary, instrument response factors will be included in accident-type RERP implementing procedures, and models for off-site dose calculation, as well as other associated RERP implementing procedures, that may involve the CAHRMS monitors.

The evaluation and necessary procedural modifications will be completed prior to 5% power. A waiver is requested.

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