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November 1, 1984
EF2-72006

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

Subject: Clarification of Position Regarding NUREG-0737 Postaccident Sampling and Monitoring Capabilities

Dear Mr. Youngblood:

The reference (3) inspection report contains several items identified by the NRC Region III Facilities Radiation Protection Section which require clarification by Detroit Edison and your review and concurrence. These items, which relate to NUREG-0737 postaccident sampling and monitoring capabilities, are discussed in the attached Enclosures, as follows:

a. Enclosure 1: Sampling and Analysis of Plant Effluents

b. Enclosure 2: Containment High-Range Radiation Monitor

c. Enclosure 3: Postaccident Sampling Capability

Other items contained in the Inspection Report, relating to postaccident sampling and monitoring capabilities, are addressed in the referenced (3) letter submitted to NRC Region III.

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

Sincerely,

Enclosures

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SAMPLING AND ANALYSIS OF PLANT EFFLUENTS

1. NRC COMMENT

NRC Region III made comments regarding the following items in Reference (3), relating to the sampling and analysis of plant effluents for post-accident release pathways, which should be referred to NRR for review (see Open Item 84-05-10):

(1) application of NUREG - 0737 design basis shielding source term (100 μCi/cc of gaseous radioiodine and particulates, deposited on Sampling Media, 30 minutes sampling time, average gamma energy (E) of 0.5 MeV);

(2) automatic vent fan trip function for the Reactor Building exhaust plenum monitor;

(3) demonstration of isokinetic representative sampling capabilities with regards to post-accident sampling of radioactive iodines and particulates;

(4) sample line heat tracing to accommodate post-accident gaseous effluent conditions; and

(5) empirical determination or use of sample line loss correction factors for iodines and particulates.

2. CLARIFICATION

There are five gaseous effluent release pathways at the Fermi 2 Plant which include:

(1) Radwaste Building Ventilation Exhaust;

(2) Turbine Building Ventilation Exhaust;

(3) Service Building Ventilation Exhaust;

(4) Reactor Building Exhaust Plenum; and

(5) Standby Gas Treatment System, (SGTS).

The Radwaste Building Ventilation Exhaust and the Turbine Building Ventilation Exhaust will trip and isolate on a high radiation signal, hence post-accident sampling will not be required for these pathways. See FSAR Sections 11.4.2.8.2.6, 11.4.2.8.2.7, and Detroit Edison Instrument Drawing No. 6I721-2181-1 for details and design.*

The Service Building Ventilation Exhaust monitor detects activity which may occur from contaminated equipment that may be worked on in the machine shop. Post-accident source terms (design basis) can not occur for this effluent pathway. The gaseous activity in the exhaust is normally expected to be below detectable levels. In addition, a high radiation alarm will initiate a trip of the Service Building Ventilation fans and automatically close the isolation dampers, therefore, post-accident sampling will not be needed for this pathway. See FSAR Section 11.4.2.8.2.8 and Detroit Edison Instrument Drawing No. 6I721-2181-1 for details and design.*

The Reactor Building Ventilation Exhaust Plenum has two process streams which discharge via this pathway, which are: (1) Off-Gas, and (2) Reactor Building Vent. The Off-Gas monitor detects activity which is attributed to fission product gasses produced in the reactor and transported in the steam through the turbine to the condenser. Since a turbine trip will occur post-accident, this process stream will not contain significant activity. See FSAR Section 11.4.2.8.2.2 and DECo Instrument Drawing No. 6I721-2181-1. The reactor building vent process stream contains activity vented from the drywell and fuel pool vent (the fuel pool vent monitors are upstream of the reactor building vent monitors). Both the Reactor Building Ventilation monitors and the fuel pool vent monitors start the SGTS, close the primary containment vent valves, trip and isolate the Reactor Building Vent system, isolate the control center, and initiate emergency recirculation upon a high-high radiation alarm. Hence these effluent streams are routed to the SGTS post-accident. See FSAR Section 11.4.2.8.2.4, 11.4.2.8.2.11, DECo Instrument Drawings 6I721-2181-1, and 4I721-2610-17 for details and design.* Therefore, post-accident sampling is not required for the Reactor Building Ventilation Exhaust Plenum.

3. CONCLUSION

The NRC comments regarding the capability for post-accident sampling and analysis of the effluent pathways are applicable only to the SGTS for the Detroit Edison Fermi 2 Plant design.

*Drawings are attached to cc copies of letter for information.

CONTAINMENT HIGH-RANGE RADIATION MONITOR

1. NRC COMMENT

The NRC Region III made the comment in Reference (3) regarding certification of calibration of each Containment Area High Radiation Monitor System (CAHRMS) detector in the decade of range between 10^2 R/HR and 10^3 R/HR, which should be referred to NRR for review (see Open Item 84-05-06).

2. CLARIFICATION

Detroit Edison has certified the CAHRMS for each detector at two points, 10 R/HR and 50 R/HR. The detectors were not certified at 10^3 R/HR. A type test was performed by General Atomics at ranges in excess of 10^6 R/HR. Detroit Edison has performed an in-situ source calibration for each detector, at two points, 1 R/HR and 10 R/HR. Futhermore, Detroit Edison has performed an in-situ electronic calibration for the CAHRMs using electronic signal substitution for all range decades (10^0-10^8 R/HR). These calibrations are considered by Detroit Edison to be adequate to demonstrate the capability of the CAHRMs to qualitatively indicate core damage during and following a postulated design-basis accident.

3. CONCLUSION

The above measurements should assure functional capability of the detector. An in-place test at 10^3 R/HR is not consistent with ALARA considerations. Currently Detroit Edison has no plans for a 10^3 R/HR certification and requests NRR concurrence with this position.

POSTACCIDENT SAMPLING CAPABILITY

1. NRC COMMENT

In Reference (3), NRC Region III made comments to be referred to NRR for review regarding the possible need for sample line heat tracing and determination of sample line loss correction factors for iodines and particulates for the Post Accident Sampling System (PASS) containment atmosphere sample line (see Open Item 84-05-07).

2. CLARIFICATION

Detroit Edison has noted the NRC Region III comments relating to containment atmosphere sample line heat tracing and sample line loss correction factors for iodine and particulates. The PASS provides the capability to promptly obtain reactor coolant and containment atmosphere samples, which are needed to determine the extent of core damage, during and following an accident in which there is core degradation.

The Detroit Edison procedure for determining core damage is based upon the assay of I-131 and Cs-137 in liquid samples and of noble gases in containment atmosphere samples. Quantitative assay of airborne radioactive particulates and airborne radioiodines in containment atmosphere samples is not required by procedure in order to determine the extent of core damage. The NRC staff has previously reviewed the PASS design and interim procedures, see SER, Supplement No. 2, Page 22-1 and Supplement No. 3, Page 22-3.

3. CONCLUSION

The NRC Region III concerns regarding containment atmosphere sample line heat tracing and determination of sample line loss correction factors for iodine and particulates are not considered applicable to the specific design and procedures of the Fermi 2 PASS. Detroit Edison's position is that no further modifications or evaluations are required and that the containment atmosphere sample line will be used only for obtaining noble gas samples for confirmation of liquid sample results and qualitative assessment of core damage.