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MAR 29 1982

Docket No.: 50-341

Mr. Harry Tauber  
Vice President  
Engineering & Construction  
Detroit Edison Company  
2000 Second Avenue  
Detroit, Michigan 48226

Dear Mr. Tauber:

Subject: Radwaste Management Systems Modifications for Fermi 2

One of the open items in Supplement No. 1 to the Fermi 2 Safety Evaluation Report is the review of the modification to radwaste management systems submitted in FSAR Amendment No. 38.

As a result of this review of the modified radwaste systems the staff has developed the enclosed requests for additional information. The requested information was discussed with your representatives.

Please amend your application to provide the additional information that is requested in the enclosure. Our review schedule is based on the assumption that the additional information will be available for our review by April 15, 1982. If you wish clarification of the requests or if you cannot meet these dates, please telephone the Licensing Project Manager, L. Kintner, within 7 days after receipt of this letter.

Sincerely,

Original signed by:  
B. J. Youngblood

B. J. Youngblood, Chief  
Licensing Branch No. 1  
Division of Licensing

Enclosures:  
Request for Additional  
Information

cc w/encls.: See next page

"The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511."

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ENCLOSURE

REQUEST FOR ADDITIONAL INFORMATION IN THE SAFETY REVIEW

ENRICO FERMI ATOMIC POWER PLANT UNIT 2

DOCKET NO. 50-341

Requests by the following branches in NRC are included in this enclosure. Requests and pages are numbered sequentially with respect to previously transmitted requests.

<u>Branch</u>	<u>Page No.</u>
Effluent Treatment Systems Branch	010-5 through 010-16
Chemical Engineering Branch -	021-28
Fire Protection Review	

Request for Additional Information  
Enrico Fermi Atomic Power Plant, Unit No. 2

010.0 EFFLUENT TREATMENT SYSTEMS BRANCH

010.6 FSAR Amendment 38 contains completely revised descriptions of the liquid waste management system and the solid waste management system, as well as changes in the data needed for the radioactive source term calculations and changes in the applicant's estimated annual releases from liquid effluents. We have reviewed the revised FSAR and find that we need the following additional information to continue our review.

010.6.1 Section 11.2, "Liquid Waste Management System", (LWMS) of the NRC Standard Review Plan, NUREG-0800, provides that the staff review the system piping and instrumentation diagrams and system process flow diagrams submitted by the applicant to determine all sources of liquid input volumes, the points of collection of liquid waste, the flow paths of liquids through the system including all by-passes, the treatment provided, and the points of release of liquid effluents to the environment. The FSAR, as amended (Amendment No. 38), provides no information relevant to the staff's evaluation of liquid wastes from any laundries and personnel decontamination facilities that may be located at the plant. Provide the relevant information described above concerning liquid wastes from laundries and personnel decontamination facilities.

010.6.2 NRC Regulatory Guide 1.143, Revision 1, October 1979, entitled "Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants," states that "The systems (handling radioactive materials in liquids) should be designed and tested to requirements set forth in the codes and standards listed in Table 1 supplemented by regulatory positions 1.1.2 and 4 of this guide". Table 11.2-5, "Radwaste Equipment Design Requirements", of the FSAR contains several deviations from Table 1. Provide justification or clarification for the following information in Table 11.2-5, which deviates from Regulatory Guide 1.143.

- (a) Table 11.2-5 of the FSAR prescribes for the design, fabrication, inspection and testing of atmospheric or 0-15 psig tanks ASME Code Section III, Class 3, or API 620 or 650, or AWWA D-100. Whereas, Table 1 prescribes for the design, fabrication, inspection and testing of atmospheric tanks the ASME Code Section III, Class 3, or API 650, or AWWA D-100; and, separately, for 0-15 psig tanks the ASME Code Section III, Class 3, or API 620.
- (b) Table 1 does not provide for the use of ASTM for atmospheric or 0-15 psig tank materials and manufacturer's standards for welder qualification and procedures for pumps as are shown in Table 11.2-5 of the FSAR.

010.6.3 The FSAR, as amended (Amendment No. 38), states that "The volume reduction and solidification (VRS) system (is) designed by the Werner-Pfleiderer Corporation" and identifies the subsystems which comprise the VRS system. The FSAR also states that "the VRS system is described in detail in a topical report (WPC-VRS-1) prepared for the NRC in November 1976". The FSAR also provides information on the VRS system. The topical report has been amended twice since 1976.

Provide clarification in the FSAR of the following areas:

- (a) The reference to the topical report should be clarified to indicate whether it includes Amendment I to the topical report, containing data provided in response to the NRC request for additional information on March 23, 1977, and to Amendment II, containing data provided in response for additional information on November 18, 1977.
- (b) It should be stated whether the extruder/evaporator is a VRS-T120 unit or another unit as described in the topical report and amendments.
- (c) The Radwaste Systems Process Flow Diagram, Figure 11.2-2, of the FSAR indicates that the nominal operating mode flow rates for four separate input streams to the extruder/evaporator are as follows:

- 010.6.3 (c) i. concentrate feed to extruder, 0.58 gpm (35 gph);  
(cont.) ii. centrifuge extruder feed, for bead and powdered resin, 1.4 gpm (84 gph);  
iii. powdered resin slurry fed, 0.56 gpm (34 gph); and  
iv. slurry feed tank discharge, bead resins, 0.63 gpm (38 gph).

In Amendment I of the topical report it is stated that "The evaporative capacity for a VRS-T120 is rated at a minimum of 120 l/hr (approximately 32 gph) for all feed streams. This rated capacity is a guaranteed capacity which has been proven to be very conservative in recent testing". It should be clarified either that the nominal operating mode flow rates are not in excess of the guaranteed capacity, or what measures will be taken in the event that the extruder/evaporator is unable to perform satisfactorily at the nominal operating mode flow rates indicated to be in excess of the guaranteed capacity.

- (d) The NRR staff evaluation of the topical report was transmitted to Werner & Pfleiderer on April 12, 1978. It is stated in the Regulatory Position of the staff's evaluation that "Any application incorporating this report by reference should include all deviations from this report". To the extent that

010.6.3  
(cont.)

the FSAR does not presently identify these deviations, they should be so identified. If there are no deviations it should be so stated.

010.6.4 Branch Technical Position (BTP) ETSB 11-3, "Design Guidance for Solid Radioactive Waste Management Systems Installed in Light-Water-Cooled Nuclear Power Reactor Plants", attached to Section 11.4, "Solid Waste Management Systems", of the NRC Standard Review Plan states that "Activated charcoal, HEPA filters, and other dry wastes which do not normally require solidification processing should be treated as radioactively contaminated solids and packaged for disposal in accordance with applicable Federal regulations". The FSAR, as amended (Amendment No. 38), provides no information specifically regarding the treatment and disposal of activated charcoal and HEPA filters.

Describe the methods to be employed for the treatment and disposal of activated charcoal and HEPA filters.

010.6.5 BTP ETSB 11-3 states that "Spent cartridge filter elements may be packaged in a shielded container with a suitable absorber such as vermiculite, although it would be desirable to solidify the elements in a suitable binder." The FSAR, as amended (Amendment No. 38), provides no information specifically regarding the treatment and disposal of spent cartridge filters.

010.6.5 Describe the methods to be employed for the treatment and disposal  
(cont.) of spent cartridge filters.

010.6.6 BTP ETSB 11-3, states that "Tanks accumulating spent resins from reactor water purification systems should be capable of accommodating at least 60 days waste generation at normal generation rates. Tanks accumulating spent resins from other sources and tanks accumulating filter sludges should be capable of accommodating at least 30 days waste generation at normal generation rates". According to the normal generation rates and tank capacities given in the FSAR as amended (Amendment No. 38), these tanks are capable of accommodating only about 15 days of waste generation. No information is given to provide the basis for determining that this is adequate in the light of the needs for allowing time for short-lived radionuclides to decay prior to processing, allowing time for process maintenance, or other factors.

Provide information for determining the acceptability of the capacities of these tanks for accommodating waste that is generated.

010.6.7 BTP ETSB 11-3 provides supplementary guidance regarding the design and use of portable solidification and/or dewatering system. Figure 11.2-2 "Radwaste System Process Flow Diagram" of the FSAR as amended (Amendment No. 38), contains blocks labeled "FROM

- 010.6.7 (cont.) PORTABLE SOLIDIFICATION SYSTEM" and "TO PORTABLE SOLIDIFICATION SYSTEM". No additional information is provided in the FSAR on these systems.

Provide information regarding the portable solidification system in relation to the relevant factors addressed in the BTP.

- 010.6.8 BTP ETSB 11-3 states that "Solidification agents should be stored in low radiation areas, generally less than 2.5 mr/hr, with provisions for sampling". The FSAR as amended (Amendment No. 38), does not provide sufficient information to determine if the radiation levels at the locations where solidification agents are stored is less than 2.5 mr/hr.

Provide the information identified above.

- 010.6.9 NRC Standard Review Plan 11.4, "Solid Waste Management System", states that the staff "compares equipment layout, design features, and mode of operation of the solid waste system to the guidelines of Regulatory Guide 1.143 and BTP 11-3". The FSAR as amended (Amendment No. 38), states that "Figure 12.1-3 shows the general layout of this (volume reduction and solidification system) equipment". However, of the 10 subsystems comprising the VRS system, only the extruder/evaporator is identified in the figure. Information on the general layout of the entire system is not otherwise provided in the FSAR.

010.6.9 (cont.) Provide complete information on the general layout of the VRS system in a figure such as Figure 12.1-3 of the FSAR.

010.6.10 Additional information is needed regarding the solid waste management system as described below.

(a) Section 11.4, "Solid Waste Management Systems" (SWMS), of the NRC Standard Review Plan, NUREG-0800 provides specific criteria necessary to meet the relevant requirements of the Commission's regulations. Included are the following:

- i. The system design parameters are based on radionuclide concentrations and volumes consistent with reactor operating experience for similar designs;
- ii. All liquid wet wastes will be solidified in accordance with a process control program prior to shipment off-site or there will be provisions to verify the absence of free liquid in each container and to reprocess containers in which free liquid is detected in accordance with BTP ETSB 11-3.

The FSAR, as amended (Amendment No. 38), provides:

- (1) no information relevant to the radionuclide content and volumes of dry solid waste;
- (2) inconsistent information in the annual total volumes of solidified wet solid wastes to be shipped (see FSAR Table 11.5-2 and Figure 11.2-2);

010.6.10  
(cont.)

- (3) no information on the normal annual total activity of solidified wet solid wastes to be shipped; and
- (4) no commitment to conformance with a process control plan or provisions to verify the absence of free water and to reprocess containers in which free water is detected.

Provide the information identified in items (1) through (4) above.

- (b) Reactor operating experience with similar designs (BWRs with powdered resin condensate polishing systems), but using solidification agents other than asphalt suggests, for Fermi 2 operating at an 80% capacity factor, that an average of about 20,000 ft<sup>3</sup> (2,300 Ci) of solidified wet waste would be shipped annually and about 16,000 ft<sup>3</sup> (less than 5 Ci) of dry waste would be shipped annually.

Provide an explanation for apparent inconsistencies between the Fermi 2 solid waste volume and activities and those expected in consideration of reactor operating experience with similar designs.

010.6.11 NUREG-0473, Revision 2, "Radiological Effluent Technical Specifications for BWRs", February 1, 1980, provides in Table 3.3.7.11-1 that radioactive liquid effluent monitoring instrumentation include a discharge canal flow rate measurement device and tank level indicating devices for tanks containing radioactive fluids outside plant buildings. The FSAR, as amended (Amendment No. 38), provides no information concerning these devices.

Describe the instrumentation identified above that will be employed for liquid radioactive effluent monitoring. If this instrumentation deviates from the provisions of NUREG-0473, provide justification for such deviations.

010.6.12 NUREG-0473, Revision 2, "Radiological Effluent Technical Specifications for BWRs", February 1, 1980, provides in Table 3.3.7.12-1 that radioactive gaseous effluent monitoring instrumentation include the following:

- (a) Noble gas activity monitor providing alarm and automatic termination of release for the main condenser offgas treatment system effluent monitoring system.
- (b) Effluent system flow rate monitors for the reactor building ventilation/purge monitoring system, main stack monitoring system, turbine building ventilation monitoring system, auxiliary building ventilation monitoring system, and radwaste area ventilation monitoring system).

- 010.6.12 (c) Noble gas activity monitor, iodine sampler, particulate (cont.) sampler and sampler flow rate monitor for the reactor building ventilation/purge monitoring system.

The FSAR, as amended (Amendment No. 38), provides no information concerning these devices.

Provide a description of the instrumentation identified above that will be employed for gaseous radioactive effluent monitoring. If this instrumentation deviates from the provisions of NUREG-0473, provide justification for such deviations.

- 010.6.13 NUREG-0473, Revision 2, "Radiological Effluent Technical Specifications for BWRs", February 1, 1980, provides in Table 4.11-2, "Radioactive Gaseous Waste Sampling and Analysis Program", that the lower limit of detection of principal gamma emitters (I-131, others) in particulate samples is  $1 \times 10^{-11}$  uCi/ml and that the lower limit of detection of I-131 is  $1 \times 10^{-12}$  uCi/ml. The FSAR as amended (Amendment No. 38) states, in Table 11.4-5, "Radiological Analysis Summary of Gaseous Process Samples", that the off-gas vent sample analysis for the gamma spectrum will have a sensitivity of  $10^{-10}$  uCi/cm<sup>3</sup> and the off-gas vent sample analysis for I-131 on particulate filter will have a sensitivity of  $10^{-10}$  uCi/cm<sup>3</sup>.

- 12 -

010.6.13 Provide clarification of these apparent inconsistencies and  
(cont.) justification of any deviations from the provisions of NUREG-0473.

010.6.14 Provide the Fermi 2 Offsite Dose Calculation Manual that will be  
referenced in the plant Technical Specifications.

## 021.0 CHEMICAL ENGINEERING BRANCH - FIRE PROTECTION SECTION:

021.34 By FSAR Amendment 38, the applicant stated it will install a radwaste volume reduction and solidification (VRS) system manufactured by Werner-Pfleiderer Corporation (WPC). The applicant has verbally provided the following information regarding fire protection aspects of the system.

- (1) The radwaste system interface with the remainder of the plant meets the fire protection requirements of BTP-CMEB 9.5-1.
- (2) Three hour fire rated barriers, including doors and penetration seals, separate the radwaste system from the rest of the plant.
- (3) Automatic sprinkler protection in conformance with NFPA Standard 13 has been provided for the radwaste system.
- (4) A dike has been constructed around the radwaste asphalt storage tank and it is sized to contain the entire contents of the tank.
- (5) No safety related systems are located in the area.
- (6) Floor drains have been so located as to prevent flammable liquid spills from affecting other plant areas.
- (7) Automatic fire detectors are provided for early warning.
- (8) The ventilation system for the radwaste area can be separated from other plant areas.

Please amend the FSAR to incorporate the above verbal statements.