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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD



In the Matter of)
)
THE DETROIT EDISON COMPANY) Docket No. 50-341
(Enrico Fermi Atomic Power) (Operating License)
Plant, Unit 2))

APPLICANTS' RESPONSES TO CEE INTERROGATORIES

Introduction

On May 25, 1979, the intervenors in this proceeding, Citizens for Employment and Energy ("CEE"), served a document entitled "CEE Interrogatories to Applicant." On June 25, 1979, Applicants^{1/} filed with the Atomic Safety and Licensing Board ("Board"), and served on the other parties to the proceeding, a number of objections to the document pursuant to §2.740b(6) and §2.741(d) of the Commission's Rules of Practice.

Pursuant to the Board's Order of March 21, 1979, Applicants herewith submit responses to the interrogatories, or portions of interrogatories, to which objections have not been made.

1/ The Detroit Edison Company, Northern Michigan Electric Cooperative, Inc, and Wolverine Electric Cooperative, Inc. are joint applicants for an operating license for the Enrico Fermi Atomic Power Plant, Unit No. 2 ("Fermi 2") and are collectively referred to as "Applicants".

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Interrogatory 1

Records concerning physical intrusions of the construction site are maintained only for the most recent three years. Records over three years old are routinely discarded.

Applicants have objected to CEE's request that Applicants develop and provide a list of all intrusions. Applicants will, however, make available for inspection and copies of all records of intrusions that are kept.

Applicants are not aware of any damage or suspected damage caused by any intrusions. It should be noted that because Fermi 2 is located on Lake Erie, some of the intrusions reported by the construction site security personnel are harmless acts without criminal intent, such as fishermen fleeing a storm, boaters with motor trouble, curiosity seekers, and the like. Steps are not generally taken to prevent intrusions of this type. Because the physical protection of the construction site conforms to current industry practice, additional security measures are not considered appropriate or necessary.

The security related documents which are presently in use do not constitute a security plan. The documents which set forth the current precautions against unauthorized intrusions are more properly characterized as general instruction manuals for certain employees responsible for

some aspects of security. These documents will be available for inspection by CEE.

Interrogatory 2

The Quality Assurance Inspection Program Plan, identified as "Quality Assurance Procedure 11 - Inspection" ("Procedure 11"), is part of the Fermi 2 Project Quality Assurance Manual. Procedure 11 is available for inspection and copies of it will be made at CEE's expense, upon request.

No changes to Procedure 11 have been required by the Nuclear Regulatory Commission ("NRC") or any "other appropriate body". The adequacy of Procedure 11, moreover, has never been questioned or challenged by a responsible agency. The implementation of Procedure 11 is audited by the NRC.

Some work has been required to be redone. All work redone is reinspected upon completion to assure that it was redone properly. All inspections of such rework are documented in Deviation Disposition Requests (DDRs). An index of all DD Rs is maintained and CEE will be provided an opportunity to review this index to identify the documents pertaining to large and small bore pipe hangers and welds of safety related components. If after review of the list of DD Rs specific DD Rs are requested, the actual document will be made available for copying.

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Interrogatory 3

Detroit Edison is in the process of preparing for its own use a list of all quality verification records, identified by Plant Identification System (PIS) numbers, which are being entered into the Automatic Record Management System (ARMS) computer program. To the extent the list has been completed, it will be available for inspection by CEE.

Applicants are not aware of any documents required to be kept by NRC that have been destroyed, mis-_____, or lost, with one exception. On December 16, 1978, a fire occurred at the site which damaged certain documents. All damaged documents have been identified and replaced and are available for inspection. In addition, this fire completely destroyed two weld process control sheets. Detroit Edison, therefore, was not able to reconstruct them as it had been able to do with the documents that were only damaged. Since these two documents were required to be kept, Detroit Edison policy required that a DDR be written for the destruction of the two documents. It has been written and Detroit Edison is evaluating solutions to the problem.

Detroit Edison does not maintain what is identified or considered to be a daily site log.

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Detroit Edison prepares and maintains "significant deficiency reports" as required by 10 C.F.R. §50.55(e). Follow up reports, which are transmitted to the Nuclear Regulatory Commission, always describe action taken to correct deficiencies. Using these documents, one can determine that deficiencies were corrected.

These documents are not classified as being confidential. The documents are available to the public in the Monroe County Public Library and in the Public Document Room of the NRC in Washington.

Detroit Edison is solely responsible for the establishment and execution of the Quality Assurance Program and specifically Paragraph XVII of Appendix B to 10 C.F.R. Part 50.

Interrogatory 4

Detroit Edison requested that two Project Managers for the Ralph M. Parsons Company be replaced. Mr. O. M. Hockensmith was replaced in April 1972 at Detroit Edison's request because of his poor attendance at the Fermi 2 site. In October 1973, Detroit Edison requested that the then Project Manager, Mr. C. B. Antill, be replaced because of his inability to maintain labor harmony at the Fermi 2 site. He also was dismissed by the Parsons Company. There are no documents regarding these replacement actions.

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The Ralph M. Parsons Company was terminated when construction was being curtailed due to Detroit Edison's change in load forecast and change in financial circumstances. This curtailment in construction activities afforded Detroit Edison an opportunity to proceed with engineering and to convert to a firm-price competitive bidding system using a construction-manager. The Parsons Company was a general contractor with a time-and-materials type of contract. With a slowdown in activities, Detroit Edison felt that greater economies could be realized by putting work out for competitive bidding. Therefore, the contract with Parsons was terminated, as Detroit Edison had a right to do under the terms of that contract. After Detroit Edison had re-let the prime contract as a construction-management contract and had begun competitive bidding, the Parsons Company was invited to bid competitively as a piping contractor, but it declined to do so.

Detroit Edison is not aware of any complaint by any Parsons Company employee made to the Parsons Company or Detroit Edison relating to quality assurance. All quality assurance concerns that arise during normal construction activities at the site are followed up by audits, inspection or surveillance. Deviations are identified in inspection reports and dispositioned through DDRs for corrective action.

Interrogatory 5

All inspection or reinspection records related to specific "construction flaws" alleged in Contention 4(e)(1) and (2) will be available to CEE for inspection and copying.

a) Cracks in Base Slab of Reactor Building

Surveys and studies were conducted to determine the nature and extent of the cracking and a program for repair was established. A fully qualified grouting contractor was selected and the repairs were conducted under the direct surveillance of Detroit Edison. The repairs were inspected and determined acceptable by Detroit Edison. The Atomic Energy Commission (now the Nuclear Regulatory Commission) was kept informed (EF2-9933, May 12, 1972).

b) Hairline Cracks in Structural Steel Surrounding the Drywell

The difficulties that were experienced with the clip angles used in the steel support framing for the slab over the torus are discussed in a report (EF2-12469, October 23, 1972) prepared by a Detroit Edison Quality Assurance Engineer. The entire matter was discussed with the Atomic Energy Commission, which concurred with the determination that this matter was properly characterized as a normal construction problem and was not a construction deficiency under 10 C.F.R. §50.55(e).

Interrogatory 6

This response is limited to the issues set forth in Contention 5 and, therefore, covers only the effluent monitors that are associated with normal operation and offsite emergency actions.

Table 1, attached below, lists the radiation monitors that are associated with the gaseous and liquid effluent streams from the Fermi 2 plant.

Radiological analysis based on readings from monitors, in conjunction with other plant and environmental parameters, is used to demonstrate compliance with 10 C.F.R. Part 20 and 10 C.F.R. Part 50, Appendix I, and to assess offsite emergency situations.

The radiological environmental monitoring program as proposed is in conformance with the requirements of the Radiological Effluent Technical Specifications (NUREG-0473, Revision 1). The program as defined in NUREG-0473 does not include remote readout monitoring devices for sampling air at the site boundary or air and water on the lake, and Detroit Edison does not consider them necessary.

A monitoring system incorporating remote readout has not been proposed by the NRC, any other regulatory body, or any employee of Detroit Edison or its contractors.

Interrogatory 7

Detroit Edison is aware of problems due to stress corrosion cracking. Detroit Edison, moreover, has been

TABLE 1
ENRICO FERMI 2
EFFLUENT RADIATION MONITORS

<u>RELEASE POINT</u>	<u>MONITOR MANUFACTURER</u>	<u>TYPE OF MONITOR</u>	<u>TYPE OF RADIATION ANALYSIS</u>	<u>FREQUENCY</u>	<u>SURVEILLANCE (a)</u>
A. GASEOUS					
1. Radwaste Building Ventilation Exhaust	Gulf Electronic Systems	1.1 Beta Scintillation 1.2 Particulate Filter 1.3 Iodine Filter	1.1 Beta Scan Xe-133, Kr-85 1.2 Beta Scan 1.3 Gamma Scan I-131	1.1 Continuous 1.2 Weekly 1.3 Weekly	Will be done in accordance with the Radiological Effluent Technical Specifications (NUREG-0473) in effect at the time of operation.
2. Turbine Building Ventilation Exhaust	Same as A.1	Same as A.1	Same as A.1	Same as A.1	
3. Reactor Building Exhaust Plenum	Same as A.1	Same as A.1	Same as A.1	Same as A.1	
4. Service Building Ventilation Exhaust	Same as A.1	Same as A.1	Same as A.1	Same as A.1	
5. Standby Gas Treatment System	Same as A.1	Same as A.1	Same as A.1	Same as A.1	
B. LIQUID					
1. Circulating Water Reservoir Decant Line	Gulf Electronic Systems	Gamma Scintillation	Gamma Scan Cs 137 Co 60	Continuous	Same as A.1

(a) To insure the equipment is properly functioning, the surveillance requirements are more appropriate than a maintenance plan.

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actively engaged in studying the effects and implications of stress corrosion cracking in stainless steel. The following design modifications or investigations have been made to remove or minimize the vulnerability to this phenomenon:

- 1) Stainless steel safe-ends were not heated during vessel stress relieving and, therefore, are not sensitized.
- 2) The 4-inch bypass lines around the 20-inch discharge valves in the recirculation system have been removed.
- 3) The core spray piping has been changed to carbon steel.
- 4) In the recirculation system:
 - a) the 12-inch risers have been solution annealed and a corrosion-resistant cladding applied to spool piece ends.
 - b) field welding procedures have been changed to minimize residual stresses. Volumetric inspection techniques will readily detect undercutting. Note: Undercuts are not allowed.
- 5) Small lines connecting the reactor system have been changed to L-grade material where feasible.

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- 6) Improved feedwater spargers are being used.
- 7) A design review on Inconel safe-ends showed those used on Fermi 2 are satisfactory and not in need of replacement.
- 8) The Control Rod Drive ("CRD") return line has been removed.
- 9) The water supply for the CRD system has been changed to a very low oxygen source during plant operation.
- 10) Additional oxygen monitoring instruments have been incorporated on the reactor and CRD systems.
- 11) Configuration of reactor water clean-up system has been modified to eliminate the resin carry-over experienced at some facilities of earlier design.
- 12) The ultrasonic testing ("UT") preservice examination of the recirculation system used the equipment and technique which optimizes detection of intergranular stress corrosion cracking.

Protection against essentially all the problems encountered in other facilities to date has been made and many mitigating conditions have been incorporated.

The Electric Power Research Institute ("EPRI") has an intensive program investigating the problem, developing detection methods, investigating alternate materials, and developing methods to decrease susceptibility of installed

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piping. To accelerate that program, an ad hoc BWR Owner's Group has been formed to give extra financial support and technical advice to EPRI. The Detroit Edison Company is a member of that group. In addition, three Detroit Edison engineers are members of EPRI task groups directing various aspects of the program. It is anticipated that some methods and techniques proven by the EPRI program will be practical and feasible for incorporation on Fermi 2 and will further reduce its vulnerability.

All documents relating to stress corrosion cracking of reactor coolant piping will be made available.

Interrogatory 8

Detroit Edison is aware of problems related to cable deterioration. All cables are subject to deterioration which is accelerated by certain environmental conditions. The cables for Fermi 2 were selected on a generic basis considering anticipated environmental conditions and are expected to provide at least forty years of service.

The electrical and physical stability of various possible cable constructions in normal rigorous service are straightforward. However, a nuclear facility, and its drywell area in particular, add factors which required additional consideration. In particular, cable constructions must exhibit an ability to withstand radiation from 1) ambient

conditions in nuclear plants; 2) design basis events such as a loss of coolant accident; and 3) total accumulated radiation over a 40 year period. In addition, cables must be flame resistant and effective fire stops must be built into the cable system.

These problems have been addressed by Detroit Edison both at Fermi 2 and through participation in the development of industry standards. These efforts are reflected in the Fermi 2 cable specifications.

The principal cable problem encountered in nuclear power plants is fire. Applicants have followed closely various incidents of fires at other facilities and the lessons learned have been incorporated in the selection and evaluation of the Fermi 2 cables.

Detroit Edison has conducted an exhaustive in-house testing program, actively participated in various industry developments relating to test procedures, and closely followed various incidents involving fires at various fossil and nuclear power plants.

In the late 1960's, Detroit Edison launched an extensive flame test program involving cables from various potential manufacturers. Before this comprehensive flame test program was embarked upon, all the available flame test procedures were critically analyzed so that important

features could be incorporated in the Detroit Edison flame test. The test procedures consulted included flame tests from Baltimore Gas & Electric Company, Anaconda, and General Electric Company.

Initial testing included Insulated Power Cable Engineers Association ("IPCEA") vertical flame tests, while subsequent tests were based on flame tests in cable trays utilizing flame sources as high as 120,000 BTUs. The latter tests were performed in close collaboration with the Nuclear Energy Liability and Property Insurance Association.

In addition to flame tests, tests were conducted on cable penetration and fire stops to ensure that Fermi 2 cables are not in any way overloaded. It is noteworthy that a great deal of the work was performed at the Engineering Research Department of Detroit Edison before a major fire occurred at TVA's Brown's Ferry nuclear plant in 1975.

Detroit Edison has actively participated in various industry committees. This involvement enabled Detroit Edison to incorporate important features into its own test procedures meant for Fermi 2 cable systems. In particular, Detroit Edison participated in Project 12-32 of the Insulated Conductors Committee of the Institute of Electronic and Electrical Engineers. The work carried out

by Project 12-32 resulted in the preparation of the standard (IEEE Std. 383-1974) which forms the basis of all test procedures relating to nuclear cable systems. The numerous flame tests conducted by Detroit Edison significantly contributed towards the flame testing portion of the IEEE Std. 383-1974. In addition, Detroit Edison significantly contributed towards the preparation of the following documents:

- Guide for Design and Installation of Wire and Cable Systems in Power Generating Stations presented at IEEE in January 1971 (71CP154-PWR)
- IEEE Standard Cable Penetration Fire Stop Qualification Test (IEEE Std. 639-1978).

Cables do not require inspection or maintenance in the manner normally associated with active equipment. Visible cables are given cursory inspections during routine operator inspection patrols. Occasionally, a cable will fail (about one per plant each ten years), but generally only after it has been mechanically damaged. Such failure is detected and isolated in a fraction of a second. A failed cable would be replaced. The repair would then be tested by the Cable Test Division of the Equipment Performance Division.

Documents relating to cable composition and installation and inspection procedures will be made available to CEE.

Interrogatory 9

Standard Review Plan 9.5.1, Section IV, indicates that the appropriate fire protection criteria for construction permit applications dated prior to July 1, 1974 is Appendix A to BTP ASB 9.5-1. The Fermi 2 design has been evaluated against the recommendations of Appendix A to BTP ASB 9.5-1. That evaluation is provided in Appendix 9B of the FSAR. Fermi 2 meets the recommendations of Appendix A relating to adequate isolation, spacing, and delineation of cable trays. Separation of cable trays, therefore, has been intentionally incorporated into the cable tray design.

Procedures have been established to detect improper separation in the Reactor Building and the Auxiliary Building. Each drawing is reviewed by a Detroit Edison engineer to assure compliance with all design criteria. Stone & Webster provides an independent review of the Reactor Building and Auxiliary Building cable tray drawings for compliance with separation criteria. A final check is accomplished when the quality control department of the electrical contractor checks the as-built condition of the trays to assure their compliance with all design requirements. If improper separation is detected, a Deviation Disposition Request is issued that requires an engineering solution to clear the problem.

In the final design for acceptable fire barriers, Flamemastic 77 has been chosen as the material to be used to coat all cable in trays not meeting spatial separation criteria. The electrical installation specification will be revised when necessary to specify the extent to which Flamemastic need be applied.

Electrical cable trays themselves are passive and do not require inspection per se. However, they are observed where visible during routine inspections. Maintenance of cable trays is not anticipated unless they were to be accidentally damaged in the process of doing maintenance on adjacent equipment. Any damage would be reviewed by staff maintenance personnel, supplemented where necessary by engineers from appropriate disciplines. Detailed repair procedures would be prepared, and these would be reviewed and need approval or revision by the On Site Review Organization and necessary experts before repairs would be allowed.

Additional information related to this interrogatory can be found in FSAR subsections 8.3.1.4.1.1 and 8.3.1.4.5.2. The fire protection review, documented in FSAR Appendix 9B (Amendment 10, October 1977), indicates all areas where sprinklers are used in Fermi 2.

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Interrogatory 10

In normal evacuation modes, some residents of the Stony Point area would travel toward the Fermi 2 facility for a short distance. This evacuation route is adequate because in such a route the evacuating residents would not be exposed to radiation in excess of the limits permitted by 10 C.F.R. Part 100.

Calculations show that if a person stood on the site boundary nearest to the plant (about 0.6 miles northwest of the reactor) for 2 hours during the worst conditions assumed for the design basis loss of coolant accident, that person's whole body dose would not exceed 6.5 rems. (See FSAR Table 15B.6.5-4). The southern-most resident of Stony Point, the resident farthest from Point Aux Peaux Road, is about 1.1 miles from Pointe Aux Peaux Road. The road itself comes no closer than about 1.1 miles from the plant. It is reasonable to expect people to travel the 1.1 miles toward the plant and evacuate the area in a period of time shorter than 2 hours, as most of them do every day during normal activities. Any evacuee traveling along Pointe Aux Peaux Road for a few blocks would then be completely out of the plume.

FSAR Chapter 15 and Appendix 13A contain additional information concerning accident analysis and emergency plans.

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Interrogatory 11

Design parameters for high water, established by engineering logic, are contained in Section 2.4 of the PSAR, Hydrologic Engineering. Specifically, maximum past lake levels are discussed in PSAR subsection 2.4.2.1 including a discussion of recent significant storms. The criteria for flood design are included in PSAR subsection 2.4.2.2 exclusive of Seiche effects. The basic design flood elevation is 588.0 feet, or 5.0 feet above site grade. Maximum surge and Seiche effects are discussed in PSAR subsection 2.4.5.3 with Probable Maximum Meteorological Event ("PMME") levels of 586.9 feet still water elevation. Wave effects and run-up (subsection 2.4.5.6.2) dictate a flood design level of 593.0 feet for the exposed faces of the Reactor Building, Auxiliary Building and RHR Complex.

During the month of June 1973, the mean lake level was recorded at elevation 575.4 feet with the highest instantaneous peak elevation 578.7 feet. The flood design level has never been exceeded in the immediate past or since records have been kept. The flood design level for the plant is greater than the PMME value which, in turn, is much greater than the highest recorded flood elevation and thus the flood design level has never been approached.

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Interrogatory 12

Detroit Edison has not separately analyzed the environmental effects of the uranium fuel cycle.

The environmental effects of the uranium fuel cycle have been considered generic. Thus, Table S-3 of 10 C.F.R. 51.20 has been utilized. A revised interim Table S-3 was published by the NRC in March 1977 (42 FR 13803, March 14, 1977) and was further amended in April 1978 (43 FR 15613, April 14, 1978). The interim Table S-3, as amended, is still in effect for licensing proceedings.

On the question of the effects of radon-222 in the front-end of the uranium fuel cycle, Detroit Edison relies on the record developed in the proceeding Duke Power Company (Perkins Power Plant, Units 1, 2, and 3), Docket Nos. STN 50-488, STN 50-489, and STN 50-490. A copy of that record will be made available to CEE by Applicants. It is also available in the Public Document Room of the Nuclear Regulatory Commission.

Interrogatory 13

Applicants cannot at this time respond specifically to this interrogatory because Applicants have not determined yet what direct testimony will need to be made on their behalf. Obviously, Applicants cannot identify the individuals

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who would present such testimony. Specific responses to this interrogatory will be made, pursuant to 10 C.F.R. §2.740(d), when the information is available. Applicants will make the relevant documents available for inspection and copying at that time.

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June 29, 1979

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DISTRICT OF COLUMBIA) ss-

LARRY E. SCHUERMAN, being duly sworn, says:

I am the Licensing Engineer in the Enrico Fermi Atomic Power Plant Project Management Organization for The Detroit Edison Company. I have read the foregoing Answers to interrogatories and they are true and correct to the best of my knowledge, information and belief.

Larry E. Schuerman
Larry E. Schuerman

Sworn to before me on
June 27, 1979.

Elizabeth C. Nelson
Notary Public

My Commission expires on 1/1/84

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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In the Matter of)	
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CERTIFICATE OF SERVICE

I hereby certify that I have this 29th day of June, 1979 served the foregoing document entitled "Applicants' Responses to CEE's Interrogatories" by mailing copies thereof, first class mail, postage prepaid and properly addressed, or by personal delivery, as so indicated, to the following persons:

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