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February 22, 1985  
NE-85-0337

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Denton:

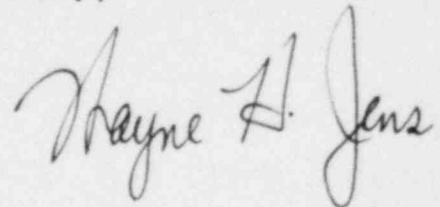
- Reference: (1) Fermi 2  
NRC Docket No. 50-341
- (2) Safe Energy Coalition to NRC,  
"10 CFR 2.206 Petition", dated  
January 28, 1985

Subject: Responses to Safe Energy Coalition Allegations

Attached herewith are Detroit Edison's responses to the allegations made by the Safe Energy Coalition in Reference 2. The allegations are general in nature and do not raise any new, unresolved, or substantive safety issues. All of the issues described in the referenced letter have at this time been resolved or satisfactorily addressed. On this basis, the request for a public hearing should be denied.

For the reasons cited above, Detroit Edison believes that resolution of this 2.206 petition should not be an impediment to receipt of an Operating License.

Sincerely,



cc: Mr. P. M. Byron  
Mr. J. G. Keppler  
Mr. R. C. Knop  
Mr. M. D. Lynch  
Mr. B. J. Youngblood  
USNRC Document Control Desk  
Washington, D. C. 20555

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## Allegation 1: Computer Systems

### RECORDS MANAGEMENT

Detroit Edison maintains a computerized Records Management and Document Control System. It is used for the retrieval of both hardcopy documents and microforms and to administer the distribution of controlled documents. All input is accomplished according to approved work instructions. The codes used in the document indexing activity are contained in an Information Systems reference manual. Coding and input personnel are trained and tested on these work instructions. As a result of this testing and training program, these personnel are certified as Nuclear Records Clerks, Level 3. The records, training, and verification by audit assure that data input is uniform and consistent.

With regard to accuracy, approximately 62,900 documents were processed during January, 1985. A sample of 1,135 documents yielded only 38 errors (all of which were corrected) for an input accuracy rate of 96.65%. Approximately 200 keystrokes are input per document, requiring 227,000 keystrokes for the 1,135 documents audited. This constitutes an accuracy rate of 99.88%. An ongoing internal audit program is in place to maintain a satisfactory accuracy rate.

Construction-phase Quality Assurance records are being maintained pursuant to the requirements of 10CFR50, Appendix B, Criterion 17, and ANSI N45.2.9-1974. In terms of retrieval of these records, the following facts should be noted. During an eight month period in 1984, there were 25,714 requests for records retrieval. The average retrieval time was 2.71 minutes per request. In January 1985, 99.9% of all requests for the retrieval of records were completed in less than 24 hours.

Independent, third-party inspectors found the following with respect to the system:

1. Duke Power - "...the documentation packages and receipt inspection reports were considered to be complete, all paper in each package traceable to an applicable unique identifying number for the component being reviewed, and acceptable in content...the records reviewed for the Core Spray equipment and piping components were found to be complete and acceptable."

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Records Management  
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2. Further, in reviewing the Management Analysis Corporation's audit of Fermi-2 records, Duke Power states "All of the records which the CAT Team selected for review were found except for one record of some electrical equipment. Upon further search the next day, this record was found...no errors or missing records were identified."

Detroit Edison's SAFETEAM organization has investigated all concerns brought to their attention regarding Records Management on the Fermi-2 Project. None of these investigations have revealed any significant safety concerns or produced evidence to support a finding that prior reviews and audits have not been thorough.

Detroit Edison is in full compliance with its commitments to records management, storage, and retrievability as directed by 10CFR50, Appendix B, Criteria 6 and 17, and ANSI N45.2.9-1974.

## Allegation 1: Computer Systems

### EMERGENCY RESPONSE INFORMATION SYSTEM (ERIS)

The contention of the Safe Energy Coalition is based on the assumption that the Safety Parameter Display System (SPDS) is a "primary function" for the operations staff in the Control Room. In fact, the SPDS is a parallel information source which will be available to the Control Room operating staff to aid their decision-making and assessment capability.

In EF2-71999, Detroit Edison advised the NRC that ERIS would be functional (i.e., operational with the automated data acquisition system available and personnel trained in its use) by December 1985. Prior to that, Detroit Edison stated in EF2-72264 that the Fermi-2 emergency response facilities and systems are presently operational (i.e., available and capable of being staffed to respond to an emergency without the use of the automated data acquisition system (ERIS) and the ERIS sub-system containing SPDS). One of the objectives of the June 1984 full-scale exercise was to demonstrate the ability to handle an emergency without ERIS/SPDS being functional. This objective was achieved through the use of the back-up systems and equipment now in place in the emergency response facilities.

The ERIS acceptance test is progressing; the training program is developed and is being implemented. The current schedule requires ERIS to be fully implemented and the training program completed by December 1985.

Based on the demonstrated effectiveness of the Fermi-2 emergency preparedness program during the June 1984 Full-Scale Exercise, the Emergency Response Facilities are adequate to support a response effort in the event of an emergency. In SALP-5, Emergency Preparedness at Fermi-2 received a Category 1 rating.

## Allegation 2: As-Built Designs

Walkdown inspections have identified some deviations, principally non-functional in nature, between the design drawings and the electrical and instrument & control (I & C) scope of the as-built plant. The deviations represent a very small percentage of the applicable drawing details. Nevertheless, their importance was recognized and corrective action was and is being taken. A program for correction of all deficiencies and actions to prevent recurrence has been implemented.

The following actions have already been taken or are scheduled to be taken to correct the deficiency:

- Walkdown inspections to verify design document conformance with the as-built plant were performed on most Quality Assurance Level 1 (QA-1) electrical and I & C equipment. The justification for the few items not included in the walkdown inspection is documented and available for review at the Fermi-2 site.
- The initial walkdown inspections addressed mechanical, electrical and I & C attributes for QA-1 instrument racks. Additional walkdown inspections addressed wiring drawings for other I & C and electrical equipment. The remote shutdown panels, safety and non-safety related, and portions of balance-of-plant wiring contained in QA-1 equipment were also included in the walkdown inspections.
- The deviations are documented and are being processed in accordance with Fermi-2 nonconformance reporting procedures. The corrective action process includes evaluation for testing or retest requirements. Hardware deviations which could potentially impact component operability or which could cause operations or maintenance personnel confusion will be corrected prior to Fuel Load.
- Drawing deviations, as described in Nonconformance Reports (NCRs) and Deviation Event Reports (DERs), will be posted against the applicable drawings before fuel load. The NCRs and DERs will be cleared as the drawings are updated.

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The following actions have been taken or are scheduled to prevent recurrence:

- o Checklists are used during the verification of the drawing revision process.
- o Design changes are marked on the base configuration document.
- o "Yellow-line" verification is performed by Nuclear Quality Assurance (NQA) on the design change documents during the in-process field inspection. Deviations from the "yellow-line" verification are identified and dispositioned before returning the equipment to service. The as-built information is communicated back to engineering.
- o Design changes affecting QA-1 electrical and I & C internal wiring connections, issued after the walkdown of the affected equipment and before February 11, 1985 (start of the revised verification process), will be verified by NQA to assure the drawing reflects the plant configuration.
- o Under the long-term program, implementation of configuration management will be evaluated.
- o Training programs have been established and implemented for those personnel involved with the corrective actions described above. These training programs and their implementation have been documented and are available for review at the Fermi-2 site.

Based on Detroit Edison's analysis, the identified deviations were limited to internal wiring of the Electrical and I & C areas. This problem was attributable primarily to construction craft exercising minor installation-equivalent options in the electrical and I & C wiring and to wiring in vendor-supplied equipment. Such installation options were not available in the mechanical (piping, valves, etc.) or the civil/structural (steel, foundations, etc.) areas. Furthermore, there were independent, third-party inspections in the latter areas (e.g., American Nuclear Insurers, hanger checks, and walkdowns). Based on the in-depth analysis of this situation, Detroit Edison believes that this matter has been thoroughly and sufficiently investigated and that a proper program is in place to remedy the problems and prevent recurrence.

### Allegation 3: Radwaste Processing System

The Safe Energy Coalition has raised concerns related to the design, construction and completion schedule for the radwaste processing systems at Fermi-2. The original radwaste processing system was designed based on General Electric BWR waste technology and the best available knowledge at the time. Subsequently, operating experience from nuclear units about the same size as Fermi-2 became available after 1975. As a result, a major re-design effort was initiated to incorporate volume reduction principles and to accommodate larger liquid inputs. Lessons learned from operating plants were also reviewed in order to incorporate improvements in operability, maintainability and ALARA programs.

In 1980 the NUS Corporation was contracted by Detroit Edison to evaluate the original system as a starting point in the re-design effort. The objective was to provide Fermi-2 with a more efficient and more economical waste processing system.

The NUS report identified areas of potential concern relative to both ALARA and industrial hazards, but no items impacting the safety of the general public were identified. Solutions to potential problems were incorporated into the re-design effort. Examples of solutions to the ALARA problems included relocation of equipment, increased shielding and additional automation of the equipment to reduce radiation exposure. These same solutions, plus additional work platforms, were used to resolve the industrial safety concerns which mainly consisted of inaccessability for maintenance or operation of equipment.

In 1984, the Michigan Public Service Commission (MPSC) used the 1980 NUS report in their staff investigation during rate case hearings to justify a proposed disallowance of earlier construction costs on the original system. The MPSC made safety allegations based on statements in the 1980 NUS report regarding the original system, but made no safety allegations about the redesigned system. The safety allegations of the MPSC were limited to areas of industrial safety only.

Incorporation of the re-design required major mechanical, civil, electrical and instrumentation modifications as well as the inclusion of a substantial amount of new equipment into the system. This new equipment was blended into the original system to create a modern, practical, efficient and economical method for processing low-level radwaste.

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The modified solid radwaste system incorporates a volume reduction and solidification system designed by the Werner-Pfleiderer Corporation (WPC). The system, on a generic basis, was described in a Topical Report (WPC-VRS-1) prepared by WPC in November 1976 and subsequently approved as a reference for other users of the system.

Detroit Edison believes that the proposed modifications to the liquid and solid radwaste systems and the proposed onsite radwaste storage facility are acceptable. The basis for acceptability is conformance of the design, design criteria, and design bases for these modifications with the applicable regulations, regulatory guides, and the previously approved technical positions.

Radwaste system testing is not planned to be entirely complete by fuel load and Detroit Edison will use vendor-supplied equipment to process the waste in the interim period. The use of vendor-processing was designed into the new system to provide an economical method of backup processing, should permanent equipment be unavailable due to maintenance requirements. Use of Vendor processing for concrete solidification, dewatering, filtration and demineralization is accepted by the NRC and has become a standard utility practice. Approximately 50% of the operating nuclear power plants utilize vendor equipment of this nature. Reports and Process Control information have been submitted to the NRC for the NUS processes to be used at Fermi-2. These and similar processes have been successfully used by NUS and other vendors throughout the country and are a proven technology. Use of equipment of this nature will not impact the safe operation of the Fermi-2 plant or jeopardize the health and safety of the community.

It should be noted that over 95% of the Checkout and Initial Operational testing has been completed on the radwaste systems and three to four million gallons of floor drain effluent have been processed through the liquid systems producing technical specification-quality water for reuse in the plant flushing and startup programs. Testing of the permanent equipment needed to support the vendor-supplied equipment will be completed prior to initial criticality. The permanent equipment needed to support liquid processing will be completed and tested prior to exceeding 5% power. The remaining permanent equipment will be completed and tested by the warranty run.



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Fermi-2 is currently evaluating the alternatives related to disposal of contaminated lubricants. A decision as to how oil should be handled in the long-term will be based on the NRC's response to the Petition for Rulemaking submitted by EEI on disposal of waste oil. In the interim, radioactive waste oil will be temporarily stored at Fermi-2 until a long-term disposal program is developed.

#### Allegation 4: Fire Protection

The concern of the Safe Energy Coalition appears to be based on their general misunderstanding about the remote shutdown capability at Fermi-2. Fermi-2 has in place two (2) remote shutdown panels that are adequate to achieve shutdown conditions. Adequate redundancy exists for the two remote shutdown panels to shutdown the plant using Division I or Division II equipment. Given this capability, Detroit Edison concluded that its safe shutdown ability was justified and not jeopardized by fire protection considerations even though these shutdown panels were not totally independent of the control room or relay room. Detroit Edison's premise was that a control room fire would impact only one division and, therefore, at least one remote panel would be available.

The presumption regarding the size of the fire was subsequently replaced by an assumed larger, more consuming fire as a result of assumptions about intervening combustibles. In addition, subsequent analyses for these larger fires also required assumptions that neither detection nor suppression systems were effective. On the basis of these constraints, it was decided that a third shutdown panel would be installed which would be independent of those fire areas of concern. This approach now provides an even greater margin of conservatism in assessing safe shutdown capability at Fermi-2.

Detroit Edison committed that construction of the third shutdown panel would be completed by September 1985. It would be tied into the plant systems during the first outage of sufficient duration after September 1985 to accomplish such a tie-in and after the NRC has approved the design and technical specification details. In the interim period, Detroit Edison has committed to implement certain compensatory measures to ensure that a fire will not start and should it start, that it will be detected early and extinguished. This will be accomplished by having a full-time fire watch in the relay room as well as a roving fire watch in the cable spreading room and other areas of concern; the control room is continuously manned and monitored. In addition, special analyses and procedures have been implemented to assure adequate fire protection during the interim period. Once the third shutdown panel is operational, the interim compensatory measures will no longer be required.

The fire prevention measures and the technical analyses evaluating the effect of fires have provided assurance that Fermi-2 can be safely shutdown without the third shutdown panel. Nevertheless, a third shutdown panel will be installed. Detroit Edison's actions and commitments together with the

Allegation 4: Fire Protection  
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in-place fire protection features assure the adequacy of the overall Fermi-2 fire protection program.

Because there are no safety issues outstanding or new safety issues identified by the Safe Energy Coalition, the request for a public hearing on this matter should be denied.

## Allegation 5: GE Mark I BWR Reactor and Containment

The Fermi-2 Plant has a BWR-4 NSSS design with Mark I type, primary containment. The primary containment consists of a light-bulb-shaped drywell and a torus-shaped pressure suppression pool (or wetwell). The basic objective of the primary containment system is to provide the capability, in the event of the postulated loss-of-coolant accident (LOCA), to limit the release of fission products to the plant site environs so that offsite doses do not exceed the values specified in 10CFR Part 100.

For the Mark I containment design, the pressure and temperature loads associated with a LOCA were based on technology obtained from testing of the Bodega Bay and Humboldt Bay Power Plant pressure-suppression concepts. The tests were performed to demonstrate the viability of the pressure-suppression concept for reactor containment design by simulating the LOCA with various equivalent piping break sizes. The test data provided quantitative information for establishing containment design pressures.

While performing large-scale testing of an advance design pressure-suppression containment (Mark III), and during in-plant testing of Mark I containments, suppression pool hydrodynamic loads not explicitly included in the original Mark I containment design basis were identified. These additional loads result from dynamic effects of drywell air and steam being rapidly forced into the suppression pool during a postulated LOCA and from safety relief valve (SRV) discharges associated with plant transient operating conditions. Since these hydrodynamic loads were not explicitly considered in the original design of the Mark I containment, it was decided in early 1975 that a reevaluation of the containment system for each utility with a Mark I containment needed to be conducted.

Recognizing the joint need to respond to requests for additional information and the essential similarity of all the Mark I plants, the domestic Mark I utilities formed an Owners Group on April 23, 1975. The Owners Group provided a unified and consistent approach to the resolution of the open issues through the pooling of technical resources. The Mark I Owners Group retained the General Electric Company to develop and manage a program which would address and resolve the stated concerns.

A two-phase program was established by the Owners Group. The Phase I effort, called the Short Term Program (STP), provided confirmation of the adequacy of the containment to maintain its integrity under the most probable postulated LOCA considering the latest information on suppression pool dynamic loads. The

first phase demonstrated that licensed domestic BWR Mark I facilities could continue to operate safely, without undue risk to the health and safety of the public, while Phase II, called the Long Term Program (LTP), was being completed. The LTP included detailed testing and analytical work to define the specific hydrodynamic loads for which each containment would be assessed.

Extensive experimental and analytical programs performed by the members of the Mark I Owners Group yielded new insights relative to the load definition and structural assessment techniques. Previous criteria had been provided in the Mark I Containment Program Load Definition Report and the Mark I Containment Program Structural Acceptance Criteria Plant Unique Analysis Application Guide. The methodology utilized provides a conservative and uniform basis for the evaluation of containment structures to ensure acceptable margins of safety. The NRC's acceptance criteria, which was utilized in the formulation of the methodology employed by the Owners Group, is provided in Appendix A of NUREG-0661.

In addition to participating in the Owners Group efforts, Detroit Edison undertook a Fermi-2 plant unique effort to address and resolve the NUREG-0661 requirements. Interim analyses indicated that modifications would be required to the suppression chamber and internal structures. Detroit Edison proceeded to design and install the modifications necessary to restore the original design safety margins. The Fermi-2 Plant Unique Analysis Report documented the efforts undertaken to address and resolve each of the applicable NUREG-0661 requirements. The Plant Unique Analysis results demonstrate that the design of the primary containment is adequate for original design loads and hydrodynamic loads.

The predicted response of the discharge piping during SRV operation also identified reaction loads which had not been previously considered in the original design of the drywell steel. These additional reaction loads were considered during the as-built reconciliation program for the drywell steel. The reconciliation program resulted in modifications to provide additional structural capacity for all loading conditions. The modifications to the drywell steel were completed in early 1984.

The health physics concerns related to the drywell have not been ignored. The primary containment is classified as a restricted area with limited access. Access will normally be required only when the plant is in cold shutdown and refueling. Health

Allegation 5: GE Mark I BWR Reactor and Containment  
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Physics will conduct detailed surveys to map area radiation levels and sources, identify proper protective measures, and strictly control personnel access as well as the duration of access.

Accordingly, the Fermi-2 containment modification program has addressed requirements of NUREG-0661. The Plant Unique Analysis results and plant operational procedures demonstrate that the Fermi-2 containment design and operation will not endanger public health and safety, increase worker exposure, or otherwise jeopardize the surrounding environment.