

U. S. NUCLEAR REGULATOR COMMISSION

REGION III

Report No. 50-341/93019(DRS)

Docket No. 50-341

License No. NPF-43

Licensee: The Detroit Edison Company  
6400 North Dixie Highway  
Newport, MI 48166

Facility Name: Fermi 2 Nuclear Plant

Inspection At: Fermi 2 Nuclear Plant  
Newport, Michigan

Inspection Conducted: November 29 - December 3, 1993

Inspector: M. J. Jordan for D. Payne 1/14/94  
D. Payne Date

Inspector: M. J. Jordan for M. Bielby 1/14/94  
M. Bielby Date

Approved By: M. J. Jordan 1/14/94  
M. Jordan, Chief Date  
Operator Licensing Section 1

Inspection Summary

Inspection Conducted November 29 - December 3, 1993 (Report No. 50-341/93019(DRS)).

Areas Inspected: Licensed operator requalification (LOR) program; LOR training administrative procedures, LOR training records and operating examination material; operator performance during LOR tests, and of licensee evaluators during requalification examination administration; program controls to assure a systems approach to training; and simulator fidelity. The inspectors used guidance in Temporary Instruction (TI) 2515/117.

Results: One level IV violation of exam administration procedures (non-compliance with CP-OP-232, "Annual Requalification Examination") (341/93019-01 (DRS)), one open item regarding training administrative procedures (341/93019-02 (DRS)), and one unresolved item concerning individual evaluations during dynamic simulator tests (341/93019-03 (DRS)) were identified.

Strengths:

- \* None noted

Weaknesses:

- \* Exam security (Section 2.1.1.A)
- \* Performance of control manipulations (Section 2.1.1.B)
- \* Individual operator evaluations (Section 2.2)
- \* Operator communications (Section 2.2)

## REPORT DETAILS

### 1.0 Persons Contacted

#### The Detroit Edison Company

- +\*D. Gipson, Senior Vice President Nuclear Operations
- + T. Barrett, Licensed Operator Requal Training Simulator
- + S. Burt, Supervisor On Shift Training
- \*L. Goodman, Director Nuclear Quality Assurance
- +\*M. Hall, Supervisor Licensed Operator Requal Training
- + R. Lightfoot, Licensed Operator Requal Training
- +\*R. McKeon, Plant Manager
- \*W. Miller, Director Nuclear Licensing
- +\*D. Ockerman, Director Nuclear Training
- \*J. Plona, Superintendent Operations
- \*J. Tibai, Compliance Engineer
- + M. Trapp, Licensed Operator Requal Training

#### NRC Representatives

- +\*M. Bielby, Region III NRC
- + M. Jordan, Region III NRC
- \*D. Payne, Region II NRC
- \*K. Riemer, Fermi NRC Resident Inspector
- +\*D. Roth, Region III NRC

\* Denotes those present at the entrance meeting on November 29, 1993.

+ Denotes those present at the exit meeting on December 3, 1993.

### 2.0 Introduction

The purpose of this inspection was to assess the licensee's requalification program for licensed operators in order to determine whether the program incorporated 10 CFR Part 55 requirements for evaluating operator mastery of training objectives and revising the program. The licensed operator requalification (LOR) program assessment included a review of training administrative procedures, requalification training records, and operating examination material. The inspectors conducted an evaluation of operator performance and the ability of licensee evaluators to administer and to evaluate requalification operating examinations. In addition, the inspectors conducted an evaluation of the effectiveness of the program controls to assure a systems approach to training. The inspectors also assessed simulator fidelity.

## 2.1 Licensed Operator Requalification Program Assessment

### 2.1.1 Program Administration

The inspectors concluded that the licensee was implementing the licensed operator requalification training program in accordance with the licensee's administrative procedures, with the exception of exam security and training on plant control manipulations.

#### 2.1.1.A Exam Security

During the review of LOR administrative procedures, the inspectors identified the following violation of security-related LOR administrative procedures and examples of weak exam security:

Procedure CP-OP-232, "Annual Requalification Examination," Rev. 2, section 3.4.2.3, states,

"Simulator Performance - administered annually as a minimum, developed and administered as described NUREG 1021, ES-604."

Section ES-604.C.1.e of NUREG 1021, "The Examiner Standards," states, in part,

"Utility managers engaged in the examination review will be subject to signing a security agreement."

Section ES-601.C.4.b of NUREG 1021 states, in part,

"... each facility representative who acquires knowledge of the content of the NRC requalification examination before it is administered will be subject to the security restrictions described below .... They shall not knowingly communicate by any means the content or scope of the examination to unauthorized persons. .... They shall not participate in any facility requalification training programs (e.g., instruction, examination, or tutoring) involving the licensees selected for the examination."

The licensed operator requalification training supervisor, who was knowledgeable of the exam, administered practice scenarios during the week of November 22, 1993, to one operating crew selected for examination the week of November 29, 1993. The supervisor avoided giving planned exam scenarios but purposely selected scenarios that were similar. This was considered a Level IV violation (50-341/93019-01 (DRS)).

Other examples of weak exam security noted by the inspectors were:

- \* No effort was made to close the simulator gallery during simulator setups and exam administration.

- \* Two candidates waited in the control room for their job performance measures (JPMs). They were able to observe parts of the JPMs being administered to the first three operators. The two waiting candidates received the same JPMs.
- \* The candidates left open or did not return reference material when they finished using it during the open-reference exam.
- \* No effort was made to keep candidates a certain distance from each other during the written test.
- \* Each of six exam packages developed for the six-week cycle is given twice during that cycle.
- \* Interviews of the operators showed them to be unaware of any formal exam security for non-NRC-administered requalification exams.

#### 2.1.1.B Plant Control Manipulations

During review of LOR administrative procedures, the inspectors noted that the method of assigning credit for plant control manipulations did not require the operators to manipulate the controls. All crew members were given credit for manipulations of controls that occurred during an evaluation.

Although not specifically stated in training administrative procedure CP-OP-202, Rev. 7, "Licensed Operator Requalification," nor in CP-OP-232, Rev. 1, "Annual Requalification Examination," discussions with LOR training personnel revealed that past practice has been to give credit for reactivity or plant evolution manipulations to all members of the crew rather than just to the individuals who directly performed or directed the manipulation.

Paragraph 59(c)(3)(i) of 10 CFR 55 requires each licensed operator to manipulate the plant controls and each licensed senior operator either to manipulate the controls or to direct the activities of individuals during plant control manipulations. The commission may approve a program developed by using a systems approach to training (SAT) in lieu of paragraphs 10 CFR 55.59(c)(2-4). Detroit Edison stated that its requalification training program was SAT based, INPO accredited, and had a plant specific certified simulator, so the program was in accordance with 10 CFR 55.59(c) requirements. Nuclear Regulatory Commission policy, as stated in the March 20, 1985 Federal Register, (53 FR 11147) and as amended on November 11, 1988 (53 FR 46603), endorses INPO accredited programs.

Part of a systems approach to training is evaluation of trainee mastery of the objectives during training. Although the records reviewed by the inspectors were marked to indicate that all licensed operators performed all required plant control manipulations, the inspectors could not conclude that all licensed reactor operators (ROs) actually manipulated

the controls and that all licensed senior reactor operators (SROs) actually manipulated the controls or directed the activities of the ROs during the plant control manipulations.

This method does not evaluate each crew-member's mastery of control manipulation. This item is considered open (341/93019-02 (DRS)) pending licensee demonstration that operators can perform or direct control manipulations.

#### 2.1.2 Requalification Training Records Review

The inspectors reviewed requalification training attendance records for training cycles 93-4 and 92-6 and concluded that licensed operators had attended all required LOR training. The inspectors noted an adequate continuing training program for Nuclear Operator Instructors as evidenced by attendance at required training.

#### 2.1.3 Requalification Examination Material Review

The inspectors reviewed the job performance measures (JPMs) and written exams administered during the inspection week. The exam material appeared to follow the guidelines of Revision 7 of the Examiner Standards.

The inspectors reviewed the written exam administered during the inspection period (LOR Annual Exam 3B Limits & Controls/Static). The inspectors identified no major weaknesses.

#### 2.2 Operator Performance Evaluation

The inspectors evaluated the performances of one operating crew during dynamic scenarios and JPM exams.

The inspectors identified the following concerns:

The inspectors noted that the utility failed to conduct individual annual operating exams. Paragraph 59(a)(2) of Part 55 states that operators must pass an annual operating exam, and that the operating test will require the operator or senior operator to demonstrate an understanding of and the ability to perform the actions necessary to accomplish a comprehensive sample of items specified in Paragraph 55.45(a)(2) through (13) to the extent applicable. These items include identifying the significance of facility instrument readings, safely operating the facility's emergency systems, and demonstrating knowledge of the facility emergency plan. Attachment 3, Section C.1, of ES-604 states, "... the annual operating test should sample from all the operating skills and abilities required of an operator and the operating crew."

Detroit Edison recorded individual performance weaknesses noted during crew evaluations, but did not have established standards nor objective grading criteria to determine if an individual demonstrated an

understanding of or ability to perform operational tasks. The lack of objective grading criteria or established standards made it uncertain that the individuals were evaluated as described in 10 CFR 55.59(a)(2). This item is considered unresolved (341/93019-03 (DRS)).

The inspectors noted that the communication technique used during the dynamic simulator exam was inconsistent. Sometimes the crew used the repeat-back of orders; sometimes the crew did not acknowledge orders, but still executed them; sometimes they interrupted each other.

The inspectors observed that operators who filled the position of communicator during the scenario were not in the control room during the entire scenario. The communicator made necessary notifications, then assisted the crew in mitigating the event. Examiner Standard section ES-604 says that the dynamic simulator requalification examination consists of two scenarios. This means that each crew and individual licensee shall be evaluated on a minimum of two scenarios. Making notifications without getting involved in mitigation would not have been considered participating during an NRC-administered exam.

The inspectors noted that the newly licensed reactor operators were unfamiliar with the format of the static exam. During the JPM exams, several of the operators did not wait for the instructors to tell them the equipment response (such as the gauge-readings, indicating-light status) before continuing on to the next step. Not waiting for equipment response during an alternate-path JPM could result in failure. Inspectors noted that no alternate-path Job Performance Measures (JPMs) were used during the exam cycle.

### 2.3 Evaluation of Licensee Evaluators

The NRC inspectors and the licensee evaluators overall assessment of operator performance was in agreement. The inspectors concluded that the licensee evaluators could adequately administer the requalification examinations and objectively evaluate the performance of the operators.

### 2.4 Systems Approach to Training Controls

The inspectors concluded that the licensee's program had controls in place to revise the training program as needed based on industry and plant events, system and procedure modifications.

### 2.5 Personnel Interviews

The inspectors conducted interviews with a cross section of management and staff from both operations and requalification training groups. Results indicated that: plant, training and operations management periodically observed and participated in requalification evaluations of licensed personnel in dynamic simulator scenarios; operations management exhibited ownership of the requalification training program; training management and staff were responsive to operations requests; and no

formal guidance on how to ensure exam security during non-NRC administered requalification exams existed.

## 2.6 Simulator Fidelity

Overall, the simulator appeared to operate and respond like the plant. The operators and the instructors stated that hardware and software recently installed in the simulator improved fidelity. There are, however, still some problems with the simulator (See Attachment 1).

For example, during a JPM of aligning HPCI for injection to the RPV, the RBCCW system isolated for no apparent reason. The simulator operator theorized that it was caused by a dirty contact. He added that some contacts had been replaced with gold-plated ones, but that the gold-plated contacts were very expensive.

During a dynamic simulator exam which included a LOCA and loss of some system-power, the simulator model failed during water level recovery. Level indications began oscillating with increasing frequency, then were lost completely, even though make-up was being provided and the break size for the LOCA was within the make-up flow rate.

## 3.0 Violations, Open Items, Unresolved Items

### 3.1 Violation

A violation is a failure of a licensee or vendor to comply with a legally binding requirement. Appendix B to 10 CFR Part 50 requires Detroit Edison to follow its procedures. As discussed in Section 2.1.1.A, the exam security associated with administration of requalification exams was not in accordance with CP-OP-232, "Annual Requalification Examination." This is a Level IV violation of 10 CFR 50 Appendix B Criterion V, "Instructions, Procedures, and Drawings."

### 3.2 Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC, the licensee, or both. The open item from this inspection, as discussed in Section 2.1.1.B, involves assurance of trainee mastery of training objectives.

### 3.3 Unresolved Items

Unresolved items are matters which require additional information to determine whether they are acceptable, violations, or deviations. The unresolved item identified during this inspection, documented in Section 2.2, involves crew evaluations versus the required individual evaluations during dynamic simulator tests.

#### 4.0 Exit Meeting

The inspectors conducted the exit meeting on December 3, 1993. Present were the plant management, training staff, and other staff shown in Section 1.0 of this report. The inspectors discussed the major areas reviewed during the inspection, the strengths and weaknesses observed, and the inspection results. The inspectors also discussed the likely informational content of the inspection report. The licensee did not identify any documents or processes as proprietary.

Attachment: SIMULATION FACILITY FIDELITY REPORT

## SIMULATION FACILITY FIDELITY REPORT

Facility Licensee: Fermi 2 Nuclear Plant

Facility Licensee Docket No.: 50-341

Operating Tests Administered On: November 29 to December 3, 1993

This form is to be used only to report observations. These observations do not constitute audit or inspection findings and are not, without further verification and review, indicative of noncompliance with 10 CFR 55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information that may be used in future evaluations. No licensee action is required in response to these observations.

While conducting the simulator portion of the operating tests, the following items were observed (if none, so state):

<u>ITEM</u>	<u>DESCRIPTION</u>
Spurious RBCCW Isolation	During a JPM of aligning HPCI for injection to the RPV, the RBCCW system isolated for no apparent reason.
Reactor Level Oscillations	During a dynamic simulator exam which included a LOCA and loss of some system-power, the simulator model failed during water level recovery. Level indications began oscillating with increasing frequency, then were lost completely, even though make-up was being provided and the break size for the LOCA was within the make-up flow rate.