

*Jordan*

JAN - 1 1992

Docket No. 50-341

The Detroit Edison Company  
ATTN: Mr. W. S. Orser  
Senior Vice President  
Nuclear Generation  
6400 North Dixie Highway  
Newport, MI 48166

Dear Mr. Orser:

SUBJECT: EXAMINATION REPORT

On November 20, 1991, and during December 2 through 6, 1991, Mr. M. Leach and others of this office administered requalification examinations to employees of your organization who operate the Fermi 2 Nuclear Power Station. At the conclusion of the examination, generic findings that evolved as a result of the examination were discussed with those members of your staff identified in the enclosed report.

As a result of this evaluation, your requalification program has been assigned an overall program rating of satisfactory in accordance with the criteria of NUREG-1021, Revision 6, Operator Licensing Examiner Standards, ES-601. For those individuals with unsatisfactory results, the facility should take corrective action as required by its approved requalification program.

During the previous requalification examination in August 1991, four concerns were identified: (1) examination security, (2) training department resources, (3) examination administration, and (4) material quality. During this requalification examination, administration of the examination was satisfactory and examination security was evaluated as a strength. The examination team noted the improvement in resources, but there was still a problem with the coordination of the preparation week. The team noted that the material proposed for the examination was weak, but the new upgraded material was both discriminating and comprehensive. It is too early to make a final judgement on the adequacy of the examination material, but your efforts to date indicate satisfactory progress.

JAN - 1 1992

ANSI/ANS-3.4-1983 identifies a facility operators report which is to be provided to the medical review examiner. You are requested to provide a formal procedure describing the method by which this occurs.

We would welcome comments relating to the administration and performance of the examination from any members of your staff, in particular the licensed operators.

In accordance with 10 CFR 2.790 of the Commission's regulations, a copy of this letter and the enclosures will be placed in the NRC Public Document Room.

Should you have any questions concerning this examination, please contact us.

Sincerely,

ORIGINAL SIGNED BY HUBERT J. MILLER

Hubert J. Miller, Director  
Division of Reactor Safety

Enclosures:

- 1. Examination Report  
No. 50-341/OL-91-02
- 2. Regualification Program  
Evaluation Report
- 3. Simulation Facility  
Fidelity Report

See Attached for Distribution

RIII  
*Leach*  
Leach/jk  
12/30/91

RIII  
*Jordan*  
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*yes*  
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*Phillips*  
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12/30/91

*yes*  
RIII  
*DeFayette*  
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12/30/91

RIII  
*Wright*  
Wright  
12/30/91

RIII  
*Martin*  
Martin  
12/30/91

RIII  
*Miller*  
Miller  
12/30/91

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Department

DCD/DCB (RIDS)

OC/LFDCB

Resident Inspector, RIII

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Health

Harry H. Voight, Esq.

Monroe County Office of  
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R. DeFayette, DRP

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No.: 50-341/OL-91-02

Docket No. 50-341

License No. NPF-43

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

Facility Name: Fermi 2 Nuclear Power Station

Examination Administered At: Newport, Michigan

Examination Conducted: November 20, and December 2 through 6,  
1991

Examiners: *R. L. Doornbos*  
R. L. Doornbos

12/30/91  
Date

T. Morgan, INEL

Chief Examiner: *M. N. Leach*  
M. N. Leach

12/30/91  
Date

Approved By: *Michael E. Bully*  
M. J. Jordan, Chief  
Operator Licensing Section 1

12/30/91  
Date

Examination Summary

Examination administered on November 20 and December 2 through 6, 1991 (Report No. 50-341/OL-91-02)

Written and operating requalification examinations were administered to six Senior Reactor Operators (SROs) and six Reactor Operators (ROs). Three operating shift crews, each consisting of two SROs and two ROs, were evaluated on the simulator portion of the NRC examination. In addition, one SRO dynamic-simulator, requalification-retake examination was administered.

Results: Four of six SROs; all six ROs; and two operating crews passed the examination. Two SROs and one crew failed the dynamic-simulator portion of the examination. The one SRO passed the requalification-retake examination. In accordance with the criteria of NUREG-1021, Revision 6, Operator Licensing Examiner Standards, ES-601, C.2.b.(1), the Fermi 2 Requalification Training Program is assigned an overall rating of Satisfactory.

Strengths:

- Job Performance Measure competence (see Section 4 for details).
- Security arrangements (see Section 4 for details).

Weakness:

- Crew Communications (see Section 4 for details).

## REPORT DETAILS

### 1. Examiners

- \*+M. Leach, Chief Examiner, NRC, Region III
- \*+R. Doornbos, Examiner, NRC, Region III
- +T. Morgan, Idaho National Engineering Laboratory

### 2. Facility Representatives Contacted

- \*W. Orser, Senior Vice President
- \*F. Abramson, Supervisor, Operations Training
- \*+S. Bruner, Director, Nuclear Training
- +M. Casey, Licensed Operator Regualification Instructor
- \*+P. Fessler, Director, Nuclear Training
- \*D. Gipson, Assistant Vice President and Manager, Nuclear Operations
- \*+M. Hall, Licensed Operator Regualification Instructor
- \*R. Henson, Operations Engineer
- +R. McKeon, Plant Manager
- \*R. Newkirk, General Director, Regulatory Affairs
- +D. Ockerman, General Supervisor, Nuclear Training
- +J. Plona, Operations Superintendent
- \*+M. Trapp, Licensed Operator Regualification Instructor

#### NRC Representatives

- C. Carpenter, Project Manager, NRR
- \*+K. Riemer, Resident Inspector, Region III
- S. Sanders, Intern, Region III
- +S. Stasek, Senior Resident Inspector, Region III
- G. Wright, Chief, Operations Branch, Region III

+Denotes those present at the Training exit meeting on December 6, 1991.

\*Denotes those present at the Management exit meeting on December 5, 1991.

### 3. Examination Material

In response to concerns raised in a previous examination report, the licensee had instigated a program to upgrade examination materials. This included a commitment to have five dynamic simulator scenarios and 20 Job Performance Measures (JPM) ready for this regualification examination. This upgraded material was developed in parallel with the proposed examination by individuals other than those on the examination security agreement. The proposed examination did not include any of the upgraded material.

The results of the examination team's review of examination material are as follows:

a. Written Exam

Time validation for the proposed limits and controls examination was inadequate. The proposed examination contained 25 questions for both ROs and SROs. The examination contained a high percentage (approximately 50%) of knowledge questions. Regional examiners were able to complete the examination well within the allowed time. A competent operator should be able to complete the questions in approximately 90 minutes, with an additional 30 minutes remaining for review. System knowledge should be tested as part of analysis or synthesis questions. The facility added 5 questions to each examination. The examination team determined the final examinations were discriminating with regards to competency.

The proposed static simulator examinations were comprehensive and discriminating, and received only minor modifications by the examination team.

b. Scenarios

The proposed examination contained seven dynamic scenarios: four scenarios were Anticipated Transient Without Scram (ATWS) situations, terminating in power/level control; two scenarios were judged by the examination team to have insufficient complexity, and did not adequately test EOP implementation; and one scenario was a repeat of a scenario used in the August 1991 requalification examination. The proposed examination contained too many scenarios of a similar nature. The intent of the examination is to test as broad a cross-section of EOP actions as possible.

The proposed scenarios also contained steps which were unlikely to occur. For example, ATWS scenarios contained steps for actions to be performed when torus temperature exceeded the Boron Injection Initiation Temperature. However, in these scenarios there was no heat being discharged to the torus, because the turbine was still on line.

The examination team made modifications, as necessary, to two of the proposed scenarios, which were then used in the examination.

The examination team selected three of the upgraded scenarios for inclusion in the examination. These

scenarios were comprehensive and discriminating and required little modification by the examination team. Individual Simulator Critical Task (ISCT) identification was lacking, however. Discussions were held with a broad cross-section of training department instructors to assist in future ISCT identification.

Neither the proposed or upgraded scenarios started with any equipment out of service. As a result more equipment is required to fail during the scenario, in order to achieve the desired endpoint. Scenarios which start with some equipment out of service, and then fail a more moderate amount of equipment, are preferable because 1) this is easier for the crew to assimilate, and 2) this is more realistic from an equipment failure probability standpoint.

c. Job Performance Measures

The submitted JPMs and questions were satisfactory with the exception of some Critical Task (CT) identification. Steps which are "verify" actions should not normally be CT's. These steps are not always directly observable and have no effect on the satisfactory completion of the step. Faulted JPM's can be used to effectively test performance of such "verify" steps.

4. Examination Administration/Personnel Performance

- a. The facility evaluators used in the requalification examination were good. Follow-up questioning was handled appropriately. In general, the facility evaluators were more critical than NRC examiners.
- b. During administration of the dynamic scenarios, two individuals and one crew were failed by both the NRC examiners and facility evaluators.
  - (1) One examinee and crew failed to terminate RCIC injection when required by the level/power control EOP. The step required all injection to be terminated with the exception of CRD and SLC. Allowing RCIC to continue injecting places an additional unnecessary heat load on the containment.
  - (2) One examinee failed to correctly classify an event as a Site Area Emergency. The event involved a drywell steam leak and a ruptured torus, which represents a loss of two fission product barriers. The examinee classified this event as an Alert.

- c. Overall comments about exam observations include:
- (1) Communications between crew members was not always precise. SRO directions to the operators were sometimes vague and were not directed to a specific operator. Repeat backs from operators were not always listened to by the SRO.
  - (2) Operators showed a high level of competence in performing JPMS in that zero JPMS were missed.
- d. Facility evaluators should try to limit post-scenario questions and evaluation discussion to 30 minutes. This minimizes operator stress.
- e. Security arrangements throughout the examination were good. The use of evaluator and candidate briefing sheets, color coded team badges, and instructors for traffic control was very effective.
- f. Instructor manpower has increased, but not all of the staff were available for this examination. This led to some coordination problems during the preparation week. One single facility individual must be the prime point of contact for the NRC Chief Examiner on all aspects of the examination.

5. General Observations

The training staff and control room operators were courteous and professional throughout the examination process. Staff members were receptive to technical opinions and were prompt in meeting the needs of the NRC examiners.

The following human factors issues were noted with respect to the Emergency Diesel Generators: the raise and lower controls, for voltage and speed control at the local control panels, are reversed from normal convention; the KW and KVAR meters have increments of 40 and 80 respectively, which are difficult to use; the control switch for the standby oil pump was incorrectly identified by almost all the operators.

6. Examination Results Comparison

A comparison of grading and evaluation of individuals and crews between the NRC and facility on the written and operating portions of the examination was within the criteria established in NUREG-1021, Revision 6, Operator Licensing Examiner Standards, ES-601, C.2.b(1).

7. Followup Items

a. Emergency Operating Procedure Implementation

A number of items requiring additional investigation were identified with respect to Emergency Operating Procedure (EOP) implementation. All of these items have been turned over to the Region III Operational Programs Section.

(1) RCIC Termination

EOP C-2, "Level/power Control", step C2-2 requires all injection to be terminated, with the exception of CRD and SLC, when certain criteria are met: reactor power greater than 3%, torus temperature above BIIT, and an SRV open. Some facility operators slowly reduced RCIC flow in this situation rather than rapidly terminating injection by either tripping the turbine or lowering the automatic controller setpoint. When asked the rationale for this, they stated it depended on existing power and level conditions. This rationale is not documented in any EOP basis documents.

(2) ATWS Level Band

One crew determined the situation met the criteria to carry out step C2-2 to terminate and prevent injection. At this time the reactor vessel level was 5" (0" equates to top of active fuel) because the crew had intentionally lowered level to the bottom of the allowed band of 0 to 214". The NASS gave the order to terminate and prevent injection. 30 seconds later the reactor power was less than 3%, and the NASS gave directions to cancel the order to terminate and prevent injection. At this time reactor vessel level was 4". The NASS then reviewed the question specified in step C2-3 "Was level deliberately lowered in C2-2" and answered this no. This resulted in the level band being specified as 0 to 214". The early lowering of level, such that power is reduced at or about the time the order to terminate and prevent is given, should not preclude that level be maintained within the band -31" to the level at which power went below 3%.

(3) Anticipation of Emergency Depressurization

The primary containment control EOP contains a

decision block TW/L-3 which states that if torus level cannot be kept greater than -38", then emergency depressurize. During the preparation week, one SRO made the early determination that level could not be maintained above -38". The SRO transitioned to the RPV control EOP, and marked the flowchart accordingly. At this point the SRO then determined he would use the anticipate blowdown override, and used the bypass valves to depressurize to the condenser. This method of using the flowcharts limits their assistance to the SRO. The individual now has to remember to emergency depressurize before -38".

Once the SRO has made the decision that level cannot be maintained above -38", then the vessel must be emergency depressurized. If the SRO wishes to use the anticipate override, then the correct way to use the flowcharts is to mark a hold at the TW/L-3 decision block. This maintains the prompt that an emergency depressurization is required prior to reaching -38".

(4) Alternate Boron Injection with Standby Feedwater

Operators were unaware of how to setup and use the cargo conveyor for adding boron with the Standby Feedwater System. During the preparation week an operator was unable to locate the conveyor. Operators were unfamiliar with the configuration of the hoses and couplings necessary to perform this procedure.

(5) SRV Opening During RPV Flooding

Two of two SROs failed to open the Safety Relief Valves (SRV) as a part of the RPV flooding EOP. The cause of this is that coordination is required between two procedures, RPV control and RPV flooding, to open the SRVs.

(6) Steam Line Isolation

One SRO was unable to explain the procedural necessity to only isolate the steamlines during RPV flooding if the SRVs are open.

(7) Level Override Statement

Operators had difficulty with the wording of the decision block for the override statement in RPV control which states "any rod cannot be determined

to be <= 00 AND it has not been determined that the reactor will remain shutdown under all conditions without boron".

b. Licensed Operator Medical Reviews

The examination team performed a review of the licensed operator medical program. There was no evidence of a facility operator's report of background medical information to the designated medical examiner. The facility described a method by which this information is available to the medical examiner. A formal procedural description of this method is required before this matter can be closed.

8. Exit Meeting

An exit meeting was conducted on December 5, 1991, with plant management and on December 6, 1991, with the facility training department. The facility representatives that attended the meetings are listed in Section 2 of this report.

The following areas were discussed during the exit meeting:

- a. Training program weaknesses, including examination material concerns. (See Section 3)
- b. Examination administration and operator performance, including crew communications and security arrangements. (See Section 4)
- c. Followup item concerns, including EOP implementation and licensed operator medical reviews. (See Section 7)

The preliminary rating of the Fermi 2 requalification training program was presented at the exit meeting. The facility was informed that the results will be reviewed by regional management and would be documented in this examination report.

The examination team noted that some material provided to the team with regards to the facility's licensed operator medical program is confidential and proprietary.

ENCLOSURE 2

REQUALIFICATION PROGRAM EVALUATION REPORT

Facility: Fermi 2 Nuclear Power Station

Examiners: M. Leach, Chief Examiner  
R. Doornbos, Examiner  
T. Morgan, INEL

Dates of Evaluation: December 2-6, 1991

Areas Evaluated: X Written X Oral X Simulator

Examination Results:

	<u>RO</u> <u>Pass/Fail</u>	<u>SRO</u> <u>Pass/Fail</u>	<u>Total</u> <u>Pass/Fail</u>	<u>Evaluation</u> <u>(S or U)</u>
Written Examination	<u>6/0</u>	<u>6/0</u>	<u>12/0</u>	<u>S</u>
Operating Examination				
Oral	<u>6/0</u>	<u>6/0</u>	<u>12/0</u>	<u>S</u>
Simulator	<u>6/0</u>	<u>4/2</u>	<u>10/2</u>	<u>S</u>
Evaluation of facility written examination grading:				<u>S</u>

Crew Examination Results:

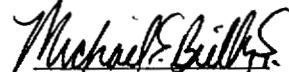
	<u>Crew Green</u> <u>Pass/Fail</u>	<u>Crew Gold</u> <u>Pass/Fail</u>	<u>Crew Pink</u> <u>Pass/Fail</u>	<u>Evaluation</u> <u>(S or U)</u>
Operating Examination	PASS	FAIL	PASS	S

Overall Program Evaluation: Satisfactory

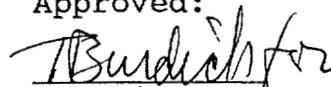
Submitted:

  
M. Leach  
Examiner

Forwarded:

  
M. Jordan  
Section Chief

Approved:

  
G. Wright  
Branch Chief

ENCLOSURE 3

SIMULATION FACILITY REPORT

Facility Licensee: Detroit Edison Company - Fermi 2 Power Station

Facility License Docket No.: 50-341

Operating Tests Administered On: 12/02/91 - 12/06/91

During the conduct of the simulator portion of the operating tests, the following item was observed:

<u>ITEM</u>	<u>DESCRIPTION</u>
DG Reactive Load	When the DG is connected in parallel with the offsite power supply, large reactive loads are observed if DG voltage is set slightly above line voltage.

This item was reviewed during the pre-exit meeting. No specific licensee response is required.