NUREG-0798
Supplement No. 6

Safety Evaluation Report
related to the operation of
Fermi-2

Docket No. 50-341

Detroit Edison Company, et al.

U.S. Nuclear Regulatory Commission

Office of Nuclear Reactor Regulation

July 1985

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ABSTRACT

Supplement No. 6 to the Safety Evaluation Report (SER) related to the operation of the Fermi-2 facility, provides the NRC staff's evaluation of additional information submitted by the licensee regarding outstanding review issues identified in Supplement No. 5 to the SER dated March 1985 and also contains the staff's evaluation of the Independent Design Verification Program. Supplement No. 6 to the SER also summarizes the conditions which are placed in the Fermi-2 full-power operating license, NPF-43, and evaluates recent proposed changes to the Fermi-2 Technical Specifications. This supplement presents the staff's conclusion that there are no outstanding issues which must be resolved prior to issuance of a full power operating license for the Fermi-2 facility.

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1 INTRODUCTION AND GENERAL DISCUSSION

1.1 Introduction

The "Safety Evaluation Report Related to the Operation of Enrico Fermi Atomic Power Plant, Unit No. 2" (NUREG-0798) (SER), prepared by the staff of the Nuclear Regulatory Commission (staff), was issued on July 10, 1981. The SER provided a summary and the results of the staff's radiological safety review of the application by the Detroit Edison Company for an operating license for the Fermi-2 facility. (Since the issuance of the low power operating license on March 20, 1985, we are referring to the Detroit Edison Company as the licensee.) We stated in the SER our conclusion that on favorable resolution of the outstanding matters described therein, the plant could be operated without endangering the health and safety of the public.

Supplements, 1, 2, 3, 4 and 5 to the SER provided: (1) our evaluation of additional information provided by the licensee regarding outstanding review issues identified in the SER; and (2) our evaluation of additional information provided by the licensee regarding revised designs. Supplement 1 also provided our response to the comments in the report by the Advisory Committee on Reactor Safeguards (ACRS).

By letters identified in Appendix A to this supplement, the licensee has provided additional information, including information regarding outstanding issues identified in Supplement 5 to the SER.

This supplement (Supplement 6 to the SER) provides our evaluation of additional information provided by the licensee by the letters identified herein.

Each section and appendix of this supplement is designated and titled the same as the corresponding section or appendix of the SER and the previous supplements which have been affected by the additional evaluation. Except as noted, each section is supplementary to the corresponding section in the SER. Appendix A to this supplement is a continuation of the chronology of the principal actions related to our safety review of the application. The NRC licensing project manager for the review of the Fermi-2 operating license application is Mr. M. David Lynch. Mr. Lynch may be contacted by calling (301) 492-7050 or by writing:

Mr. M. David Lynch
Division of Licensing
Nuclear Regulatory Commission
Washington, DC 20555

This SER is a product of the NRC staff. NRC staff members who were principal contributors to this report are identified in Appendix G.

Copies of this supplement are available for public inspection at the Commission's Public Document Room at 1717 H Street, NW, Washington, DC, and at the Monroe County Library System, 3700 South Custer Road, Monroe, Michigan 48161. They are also available for purchase from the sources indicated on the inside front cover.

1.8 Summary of Outstanding Issues

1.8.1 Prelicensing Issues

The resolution of some of the outstanding issues identified in Supplement 5 to the SER is described in appropriate sections of this supplement. There are no outstanding issues remaining in our review which must be resolved prior to issuance of the full power Fermi-2 operating license.

1.8.2 License Conditions

In our review of outstanding issues identified in the SER and in Supplements No. 1 through 6, the licensee has satisfied one of the issues which was identified in Supplement 5 as a license condition. The license conditions remaining in our licensing review are listed below, with the number of the appropriate section in the SER or in Supplements No. 1, 2, 3, 4, 5 or 6 to the SER in which we discuss the license condition.

(1) Safety/relief valve in-plant testing (SER Supplement 5, Section 3.8.1).

(2) Suppression pool temperature measurements (SER Supplement 5, Section 3.8.1).

(3) Environmental qualification of equipment (SER Supplement 5, Section 3.11).

(4) Control room habitability (SER Supplement 6, Section 6.4.1).

(5) Study of multiple control system failures (SER, Section 7.2.2).

(6) Modifications for fire protection (SER Supplements 5 and 6, Section 9.5.1).

(7) Emergency diesel-generator lubricating oil surveillance program (SER Supplement 5, Section 9.5.7).

(8) Low-pressure turbine-disc inspection (SER, Section 10.2.2).

(9) Retention of persons with BWR operating experience on shift (SER Supplements 5 and 6, Section 13.1).

(10) Inservice inspection program.

(11) Initial test program (SER, Section 14).

(12) Iodine/particulate sampling system (SER Supplement 6, Section 22, Item II.F.1).

(13) Emergency planning.

(14) Emergency response capability.

(15) Actions based on the generic implications of the Salem ATWS events.

1.10 Independent Design Verification

An Independent Design Verification Program (IDVP) was initiated by the licensee in December 1982 at the request of the NRC staff. This IDVP was conducted by Cygna Energy Services, Inc. (Cygna) which submitted a report on its design verification in June 1983. In response to staff requests for additional information, Cygna supplemented its original report in November 1983 and in November 1984. Our evaluation of Cygna's IDVP is contained in Appendix R to this supplement.

1.11 Changes in the Technical Specifications

The licensee recently proposed a number of changes in the Fermi-2 Technical Specifications (NUREG-1089) which were issued as an integral part of the Fermi-2 low power operating license, NPF-33. The most recent request was contained in the licensee's letter dated June 27, 1985. Our evaluation of these proposed changes is contained in Appendix S to this supplement.

5 REACTOR COOLANT PRESSURE BOUNDARY

5.4 Component and Subsystem Design

5.4.2 Residual Heat Removal System

In the SER we issued in July 1981, we stated that the Fermi-2 Technical Specifications would require that the low-pressure coolant injection mode operability be verified every 30 days and that every 90 days, each pump be shown to be capable of being started from the control room. We have subsequently revised our requirements governing the frequency of these tests to reflect the frequencies which are in our Standard Technical Specifications. These frequencies are 31 days between each test of the low-pressure coolant injection mode and 92 days between each pump start from the control room.

6 ENGINEERED SAFETY FEATURES

6.4 Control Room Habitability Systems

6.4.1 Radiological Dose Protection

In Supplement No. 5 to the SER, we stated that Inspection Report No. 50-341/84-43, dated January 11, 1985, expressed our concern that contrary to the guidelines in Regulatory Guide 1.52, silicone sealants were used to seal those leaks which were found during the leakage acceptance tests on the control room filter system ducts and housings. In the licensee's letter dated June 3, 1985, the licensee stated that silicone sealant was not used on the housings other than at the duct-to-housing connection. Accordingly, we find that with this clarification, the licensee has made minimal use of silicone sealants and is, therefore, in general conformance with our positions in Regulatory Guide 1.52.

In Supplement No. 5, we stated that we would place a condition in the Fermi-2 operating license incorporating the licensee's commitments regarding that portion of the control center air-conditioning system which is outside the control room zone. The license condition which we incorporated into the low-power license states that resolution is required before exceeding five percent of full power. However, the licensee's commitment was to satisfy this requirement before startup after the first refueling outage. Upon further review of this matter, we agree that resolution of this matter can be accomplished before startup after the first refueling outage. Accordingly, we will place a revised condition in the Fermi-2 operating license reflecting this change. On this basis, we find that the design of the Fermi-2 control room will still meet the requirements of GDC 19 of Appendix A to 10 CFR Part 50.

7 INSTRUMENTATION AND CONTROL

7.1 Introduction

7.1.2 Specific Findings

Use of Nonsafety-Grade Equipment

In the SER we issued in July 1981, we listed the reactor feedwater controller (Item 4) and the reactor/turbine pressure regulator (Item 6) as nonsafety-grade equipment which were assumed to function properly in the licensee's analysis of some anticipated operational occurrences (i.e., transients). While the other four control systems listed in this section of the SER are explicitly referred to in the Fermi-2 Technical Specifications, Items 4 and 6 described above are not. However, we note that the proper functioning of these two control systems is implicitly required by the Fermi-2 Technical Specifications inasmuch as they must function properly to ensure the operability of the other systems in the plant for which they provide support. Accordingly, we reaffirm that the reactor feedwater controller and the reactor/turbine pressure regulator must continue to meet appropriate design criteria as control systems and, therefore, be subjected to the appropriate testing and surveillance criteria implicitly applied to them in the Fermi-2 Technical Specifications.

Our intent is to insure that those portions of these control systems which may be actuated during the course of anticipated transients which are analyzed in the Fermi-2 FSAR, have a high degree of availability based, in part, on the Fermi-2 Technical Specifications. To this end, the licensee has provided testing and surveillance intervals for the reactor vessel level 8 trip and the turbine steam bypass system. We believe that these are appropriate provisions for the Fermi-2 Technical Specifications and that, therefore, this matter is now resolved.

9 AUXILIARY SYSTEMS

9.5 Fire Protection, Communication, Lighting and Emergency Diesel Engine Systems

9.5.1 Fire Protection

In Supplement No. 5 to the SER, we stated that we had found the proposed Fermi-2 fire protection program to be acceptable. We also stated that we would condition the Fermi-2 operating license to include the commitments made by the licensee. (These commitments became a portion of license condition 2.C(9) in the low power operating license NPF-33, issued on March 20, 1985.) Subsequently, in its letter dated June 18, 1985, the licensee stated that it could not obtain either a labeling or a listing of three doors as required by our guidelines in Section D.1(j) of Appendix A to BTP ASB 9.5.1. Accordingly, the licensee requested a deviation request for these three doors which are T3-6, R1-8 and R1-11. We have reviewed this request and provide in this supplement, our evaluation in a revision to Section III.B of Appendix E.

The licensee also provided additional information in its letter dated June 18, 1985, regarding its prior deviation request for the placement of control room fire detectors in accordance with the requirements of NFPA 72E. Our evaluation of this additional information is presented in this supplement in a revision to Section II.D of Appendix E.

In Section VII.D of Appendix E in Supplement No. 5, we discussed and evaluated some of the administrative procedures at the Fermi-2 facility which might be required in the event of a fire affecting safety-related systems. In this evaluation, we identified certain measures affecting the reactor heat removal (RHR) service water system which we incorporated into license Condition 2.C(9)(d). These measures are designed to ensure the proper functioning of the emergency equipment service water (EECW) system in the event of spurious activations caused by a fire. We have reviewed our previous position on this matter and now conclude that greater plant operational flexibility for maintenance of the RHR service water and ultimate heat sink system components can be achieved by establishing a second return flow path to the ultimate heat sink. Since this increased flexibility in plant operation enhances the safety of the Fermi-2 facility, we conclude that that portion of the license condition related to the positioning of the RHR service water system valves can be satisfied by opening and removing power from certain division 1 cooling tower spray nozzle isolation valves as discussed in the revised Section VII.D of Appendix E contained in this supplement.

Finally, the licensee stated in its letter dated July 5, 1985, that it would be shutting down the Fermi-2 facility no later than October 30, 1985, for an outage of at least three weeks. In compliance with the requirements of license Condition 2.C(9)(d) of the Fermi-2 low power license, this requires the licensee to install and make operational, the independent alternate shutdown system which we evaluated in Section VII of Appendix E to Supplement No. 5. Accordingly, we

have revised this portion of the license condition related to the independent alternate shutdown system to reflect this commitment by the licensee. We have removed that portion of the license condition related to labelling of the fire doors, installation of additional fire detectors and hydrostatic testing of the yard piping to reflect the completion of these matters.

Based on our review of the additional information submitted by the licensee, we find the licensee's proposed fire protection program with the deviations we have approved in the revision to Appendix E to this supplement, is in conformance with our guidelines in Appendix A to Branch Technical Position ASB 9.5-1, Appendix R to 10 CFR Part 50 and General Design Criterion 3 of Appendix A to 10 CFR Part 50. On this basis, we find the Fermi-2 fire protection program to be acceptable. We will condition the Fermi-2 operating license to include the most recent commitments made by the licensee.

11 RADIOACTIVE WASTE MANAGEMENT

11.2 Radioactive Waste Treatment System Description and Evaluation

11.2.1 Liquid Radwaste Treatment System

In Supplement No. 5 to the SER, we referred to the Commission's Annex to Appendix I of 10 CFR Part 50. However, we stated an incorrect date for its issuance. The correct date for issuance of the Commission's Annex to Appendix I is September 4, 1975. Additionally, we have determined that the permanent liquid radwaste system has been made operational. Accordingly, we have removed the license condition related to this system.

11.2.3 Solid Radioactive Waste Treatment System

In Supplement No. 5 to the SER, we stated that we had not completed our review of the vendor's topical report on the portable solid radwaste treatment system (i.e., NUS Topical Report PS-53-00378) which was referred to by the licensee. Based on our review at the time Supplement No. 5 was issued, we tentatively concluded that the portable solid radwaste treatment system proposed for the Fermi-2 facility was acceptable since it appeared to be in accordance with our acceptance criteria in Section 11.4 of the Standard Review Plan (NUREG-0800). We further stated that we would report our evaluation of this portable solid radwaste system in a future supplement to the SER. We have now completed our evaluation of this topical report and, in our letter to the NUS Corporation dated May 30, 1985, we stated that we find the topical report to be acceptable for referencing in license applications.

We have further reviewed and found acceptable the interface between the Fermi-2 facility and the portable solid radwaste system, the location and arrangement of the portable system in the plant, the specific characteristics and volumes of waste to be processed by the portable system, and the capability of the plant to meet the criteria of Appendix I to 10 CFR Part 50 with the portable system in operation. Furthermore, there are no exceptions or deviations in the Fermi-2 facility from this topical report. Accordingly, we find that the proposed portable solid radwaste system at the Fermi-2 facility is acceptable.

In its letter dated June 12, 1985, the licensee submitted the proposed Fermi-2 Process Control Program (PCP) for our review and approval since the Fermi-2 Technical Specifications require the licensee to solidify or dewater radioactive wastes in accordance with the process control program(s) which we have approved. The Fermi-2 PCP covers solidification and/or dewatering either using the temporary processing and solidification system supplied by NUS or solidification using the permanently installed asphalt extruder/evaporator. The licensee states that testing of the permanently installed solidification system will begin soon after initial criticality. (Initial criticality was achieved on June 21, 1985.) This testing is intended to confirm that the proper parameters have been selected for proper solidification of radwaste. The licensee further states in its letter of June 12, 1985, that the test results relating to solidification will be submitted for our review upon completion of this testing.

Based on our review of the proposed Fermi-2 PCP, we find that it generally complies with our criteria and guidelines and, therefore, is acceptable.

13 CONDUCT OF OPERATIONS

13.3 Emergency Preparedness Evaluation

13.3.1 Introduction

In Supplement No. 5 to the SER, we reported our evaluation of a number of emergency preparedness subject areas. This resolved all outstanding issues related to emergency preparedness. However, we stated in Section 13.3.4 of Supplement No. 5 that we had requested FEMA to conduct a confirmatory review of the October 1984 emergency plan adopted by Monroe County. Section 13.3.4 of this supplement contains FEMA's evaluation of this matter.

A recent court decision has impacted the Commission's interpretation of adequate arrangements for medical services for members of the public who are offsite. The resolution of this issue is discussed in Section 13.3.2.16 of this supplement.

Finally, the licensee requested an exemption from one of the requirements of Appendix E to 10 CFR Part 50 regarding the conduct of a full-participation emergency preparedness exercise. Our evaluation of this exemption request is presented in Section 13.3.7 of this supplement.

The order of presentation and the numbering of the sections generally corresponds to the listing of these items in Section 13.3 of Supplement No. 3.

13.3.2 Evaluation of the Emergency Plan

13.3.2.16 Offsite Emergency Planning Medical Services

In a recent decision, GUARD v. NRC, 753 F.2d 1144 (D.C. Cir. 1985), the U.S. Court of Appeals vacated the Commission's interpretation of Section 50.47(b)(12) of 10 CFR Part 50 to the extent that a list of facilities was found to constitute adequate arrangements for medical services for members of the public who are offsite and may be exposed to dangerous levels of radiation. The Commission has now provided guidance to be followed in determining compliance with this regulation pending its determination of how it will proceed in response to the Court's remand. In particular, the Commission directed that Licensing Boards, and in uncontested cases, the staff, should consider the uncertainty attendant to the Commission's interpretation of this regulation, especially in regard to its interpretation of the term "contaminated injured individuals." In GUARD, the Court left open to the Commission the discretion to reconsider whether the term should include members of the offsite public exposed to dangerous levels of radiation and, thus, whether arrangements for this population of individuals are required at all. For this reason, the Commission observed that it may reasonably be concluded that "no additional actions should be taken now on the strength of the present interpretation of that term." Accordingly, the Commission observed that it can be found "that any deficiency which may be found in complying with a finalized post-GUARD planning standard (b)(12) is insignificant for the purposes of 10 CFR §50.47(c)(1)." In this regard, the

Commission, as a generic matter, noted the low probability of accidents which might result in exposure of members of the offsite public to dangerous levels of radiation as well as the slow development of adverse reactions to overexposure. (Refer to Emergency Planning; Statement Policy, 50 FR 20892, May 21, 1985.)

Consistent with the foregoing Statement of Policy, the licensee has confirmed in its letter dated June 18, 1985, that, in good faith reliance on the Commission's earlier interpretation of Section 50.47(b)(12) of 10 CFR Part 50, the emergency plans of the offsite response jurisdictions which would be involved following an emergency at the Fermi-2 site, contain a list of medical service facilities. The existence of such a list in the pertinent plans has been confirmed by FEMA. As stated by the Commission, such good faith reliance, in the circumstances, can be found to constitute "other compelling reasons" within the meaning of Section 50.47(c)(1) of 10 CFR Part 50. Further, the licensee has committed in its letter of June 18, 1985, to fully comply with the Commission's response to the Court's remand.

Accordingly, on the basis of the factors identified by the Commission in its Statement of Policy, we have determined that the requirements of Section 50.47 (c)(1) of 10 CFR Part 50 have been satisfied so as to warrant issuance of the full power Fermi-2 operating license pending further action by the Commission with respect to the requirements of Section 50.47(b)(12) of 10 CFR Part 50.

13.3.4 Federal Emergency Management Agency Findings on Offsite Emergency Plans and Preparedness

Federal Emergency Management Agency (FEMA) interim findings on offsite emergency plans and preparedness were reported in Supplements 4 and 5 to the SER. Based on a review of the State and local emergency plans, and on observations made during a full-participation exercise conducted on February 1-2, 1982, FEMA reported that an adequate level of offsite planning and preparedness existed for the Fermi-2 facility. In Supplement No. 5, we stated that we had requested further FEMA support in confirming that a revised emergency plan for Monroe County dated October 1984, which had been formally adopted by the Monroe County Board of Commissioners, continued to support FEMA's previous findings of adequacy. This previous FEMA finding was based on a draft Monroe County plan dated December 1983. In its report dated May 3, 1985, FEMA has provided a supplemental interim finding on the revised Monroe County plan based on a review of the October 1984 plan by the FEMA Region V Regional Assistance Committee. In this report, FEMA concluded that there is reasonable assurance that the revised Monroe County plan is adequate and capable of being implemented to protect the health and safety of the public.

A second full-participation emergency preparedness exercise for the Fermi-2 facility was conducted on June 26-27, 1984. The FEMA evaluation of this latter exercise was provided in a report dated October 15, 1984. No significant deficiencies affecting public health and safety were identified, thereby confirming the continued adequacy of offsite preparedness for the Fermi-2 facility. A subsequent FEMA memorandum dated January 25, 1985, stated that the schedule of corrective actions submitted by the State of Michigan to address the lesser deficiencies observed by FEMA in the June 1984 exercise, had been reviewed and found adequate by FEMA.

13.3.6 Conclusion

Based on a review of the FEMA findings and determinations on the adequacy of state and local emergency plans and preparedness as reported in Supplements No. 4 and 5 and Section 13.3.1 of this supplement, and on the previous NRC assessment of the adequacy of the licensee's onsite emergency plans and preparedness reported in Supplements 4 and 5, we conclude that the overall state of onsite and offsite emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at the Fermi-2 nuclear power plant.

13.3.7 Exemption from Full-Participation Exercise

In its letter dated June 14, 1985, the licensee requested an exemption from the provision of Section IV.F of Appendix F to 10 CFR Part 50 which requires the conduct of a full-participation emergency preparedness exercise within one year before issuance of a full power operating license. The applicable provision of Section IV.F states that:

> "This exercise shall be conducted within one year before the issuance of the first operating license for full power and prior to operation above 5% of rated power of the first reactor, and shall include participation by each state and local government...."

Consistent with other Commission emergency planning regulations (refer to Section 50.47 of 10 CFR Part 50 and the Statement of Considerations, 47 FR 30232 dated July 13, 1982), the objective of Section IV.F is to assure that an adequate state of emergency preparedness is demonstrated through conduct of an offsite emergency preparedness exercise within one year before a nuclear plant is authorized to exceed five percent of rated power.

Fermi-2 was issued a license authorizing operation up to five percent of rated power on March 20, 1985. However, this license is not considered to constitute a full power operating license as referred to in Section IV.F. The licensee estimates that the Fermi-2 facility will be ready for power ascension and operation above five percent of rated power by mid-July 1985; initial criticality was achieved on June 21, 1985. Two full-participation emergency preparedness exercises have been conducted at the Fermi-2 site; the first on February 1-2, 1982, and the second on June 26--27, 1984. The next exercise is scheduled for October 2, 1985, and is to include voluntary local participation; the State is not expected to participate. In its exemption request, the licensee stated that the October 1985 exercise date was established in mutual consultation with representatives of FEMA Region V, NRC Region III, and the State of Michigan.

The two full-participation exercises cited above were observed and evaluated by the NRC and FEMA. The exercise findings were used to establish that an adequate level of emergency preparedness exists for the Fermi-2 onsite and offsite response organizations as reported in Supplements 4 and 5 and Section 13.3.4 of this supplement.

Since the June 1984 exercise at the Fermi-2 site, the State of Michigan has participated in two partial participation exercises at other sites during 1985 and, in accordance with the biennial exercise frequency requirement applicable

to offsite organizations, is next scheduled to participate in a full-participation exercise at the Palisades facility in August 1986.

The licensee stated in its exemption request that: (1) the Fermi-2 emergency preparedness organization verifies communications with State and local agencies monthly; (2) medical training and drills were conducted at both support hospitals and with the ambulance staff in November 1984; and (3) three drills were held prior to the June 1984 exercise which involved local offsite agency participation.

In its letter dated July 3, 1985, the licensee stated that a test of the recently installed emergency communication system in the Monroe County Emergency Operations Center has been scheduled for the week of July 15, 1985. In this letter, the licensee has agreed to complete this test prior to exceeding five percent of rated power. In addition, arrangements have been made for Monroe County to participate in at least two preparatory drills, tentatively scheduled for September 11 and 25, 1985, prior to the exercise scheduled for October 2, 1985.

We have reviewed the licensee's exemption request and find that the following factors support the granting of the requested exemption:

a. Prior to issuance of an operating license, the conduct of two full-participation emergency preparedness exercises with favorable findings; the latest of these was conducted on June 26-27, 1984.

b. The conduct and scheduling of various drills in 1984 and 1985 which have and will test elements of the Fermi-2 emergency plan which involve offsite response agencies.

c. The participation of the State of Michigan in two partial participation emergency preparedness exercises at other sites in 1985.

d. The scheduling of an exercise at the Fermi-2 site in October 1985 which will include voluntary local offsite participation.

Based on the foregoing considerations, we conclude that an exemption from the requirements of Section IV.F of Appendix E to 10 CFR Part 50, as discussed above, is authorized by law, will not endanger life or property or the common defense and security, and is otherwise in the public interest. On this basis, we grant the requested exemption.

22 TMI-2 REQUIREMENTS

22.2 TMI Action Plan Requirements for Applicants for Operating Licenses

I. OPERATIONAL SAFETY

I.D.1 Control Room Design Review

Discussion and Conclusions

In its letter dated May 21, 1985, the licensee proposed revising the date for the submittal of its Summary Report of its detailed control room design review (DCRDR) from September 30, 1985, to November 30, 1986. The basis for the licensee's proposed delay in submitting its DCRDR is that:

1. The proposal to submit the DCRDR on September 30, 1985, was made on April 15, 1983, assuming at that time that September 1985 would be sufficiently past the startup of the Fermi-2 facility so as to minimize other activities during the busy startup period. Subsequent slips in the readiness of the plant for license issuance have moved the startup phase into the September 1985 time frame.

2. Based on the April 1983 estimate of the license issuance date, the licensee believed that its operating staff would have gained considerable operating experience with plant systems and the control room in the operational mode. As noted above, subsequent slips have invalidated this assumption.

3. Most importantly, we require the DCRDR to be performed based on approved Emergency Procedures Guidelines (EPGs) which in turn are related to a function analysis used to identify information and control needs. Moreover, a plant specific analysis must be performed to translate the EPGs into plant specific technical guidelines which will be then used, via a task analysis to develop the control and information needs applicable to the Fermi-2 facility. An approved set of EPGs will not be available until about fall 1985.

4. A DCRDR performed at the Fermi-2 facility prior to the development of an approved set of EPGs would have to be repeated later, thereby significantly increasing the licensee's effort and our review with very little advantage since we have conducted a preliminary review of the Fermi-2 control room design which we found supported the issuance of a full power licensee.

Based on the foregoing considerations, we find that the licensee's revised submittal date of November 30, 1986, for the submittal of its DCRDR is acceptable. We will revise the full power license to reflect the licensee's latest commitment on this matter.

In the same letter cited above, the licensee proposed revising the submittal date from June 30, 1985, to September 30, 1985, for the submittal of its preliminary report describing how the requirements of Regulatory Guide 1.97, Revision 2, have been or will be met. Its basis for this deferral is very similar

to that discussed in Item 1 above. Accordingly, we find this proposed revision acceptable based on the involvement of its technical staff in the startup phase of the plant and the relatively short delay in the submittal date. We will revise the full power license to reflect the licensee's latest commitment on this matter.

II SITING AND DESIGN

II.F.1 Additional Accident-Monitoring Instrumentation

Attachment 2, Sampling and Analysis of Plant Effluents

In Supplement No. 5 to the SER, we stated that this issue is closed pending verification by the licensee that the sampling system performs its intended function, prior to startup after the first refueling outage. To place this matter in perspective, we state in our acceptance criteria in Section 11.5 of the Standard Review Plan that the design of systems for the instrumented monitoring or sampling and analyses of identified gaseous effluent paths in the event of postulated accidental releases, should meet the provisions of NUREG-0737, Items II.F.1, Attachments 1 and 2 and Regulatory Guide 1.97 (Position C and Table 1 or 2, as applicable). We also provide guidance in Regulatory Guide 1.97, Revision 3, that licensees should make provisions for the continuous collection of representative samples of iodine radioisotopes and particulates. We further state in this regulatory guide that: (1) "collection of representative samples" means obtaining the best samples practicable given the exigencies which attend the accident environment; (2) line losses or line deposition should be empirically predetermined; and (3) appropriate loss correction factors should be applied.

In its letter of May 16, 1985, the licensee provided additional information on this matter and stated its position that the noble gas effluent monitor cannot be used to project the magnitude of radioiodine and particulate releases during an accident. Previously, the licensee had described in its letter dated December 13, 1984, correction factors developed for sample line losses due to iodine plateout and particulate depositions. In this letter, the licensee stated that it had calculated potential line losses for various iodine chemical species using the method described by M. T. Kabat in his article, "Deposition of Airborne Radioiodine Species on Surfaces of Metals and Plastics," Proceedings of the 17th DOE Air Cleaning Conference, 1982. The licensee further stated that sample line loss correction factors, based on the calculated values, are being incorporated into the appropriate plant procedures. (We have verified that these correction factors have been incorporated into approved plant procedures.) In its previous letters dated October 31 and December 13, 1984, the licensee provided a commitment to submit the scope of a sample line loss test, including an evaluation of the applicability of such a test.

The licensee's conclusion as stated in its letter dated May 16, 1985, is that: (1) through the use of the calculated sample line loss factors in approved procedures (described in its December 13, 1984 submittal); (2) its commitments to NUREG-0737, Item II.F.1(2); and (3) satisfying the applicable portions of Regulatory Guide 1.97, Revision 2, it has satisfied the license condition on this matter. Further, the licensee states its position in its letter of May 16, 1985, that the need for a submittal of the proposed test scope and its evaluation of its applicability, should be deferred until we have completed a review of the licensee's latest submittal on this matter.

However, since we have not completed our review of the licensee's letter of May 16, 1985, we are retaining the license condition in the Fermi-2 operating license regarding Item II.F.1(2) of NUREG-0737. We will provide our evaluation of this matter in a future supplement to the SER.

II.K.3.22 Automatic Switchover of Reactor Core Isolation Cooling System Suction - Verify Procedures and Modify Design

Discussion and Conclusion

In Supplement No. 2 to the SER, we stated that we would include in the Fermi-2 Technical Specifications the requirement that the licensee lock the door on the cabinet enclosing the instrumentation and controls used for automatic switchover of the reactor core isolation cooling pump suction. We have rereviewed our position on this matter and find that the licensee's commitment to administratively control access to this panel (i.e., to lock the cabinet and control access to the keys), is sufficient. Accordingly, we have not placed such a requirement in the Fermi-2 Technical Specifications.

III EMERGENCY PREPARATIONS AND RADIATION PROTECTION

III.D Radiation Protection

III.D.1.1 Integrity of Systems Outside Containment Likely to Contain Radioactive Material

In Supplement No. 5 to the SER, we stated that we would require resolution of three exceptions made by the licensee to Item III.D.1.1 of NUREG-0737, prior to issuance of a full power license for the Fermi-2 facility.

In response to our position on this matter, the licensee submitted additional information in its letter dated June 3, 1985, regarding the three exceptions noted in Supplement No. 5. The licensee's position is that the Fermi-2 leakage reduction program tests gaseous systems by measuring, to within two standard cubic centimeters per minute (sccm), the flow required to maintain a constant test pressure and that this makeup flow is equivalent to the system leakage rate. This method of leak testing is similar to that required by Appendix J to 10 CFR Part 50 for leak rate testing of the primary containment. If any makeup flow is detected, the licensee will test each system component with a soapy liquid to identify leakage sources. Corrective action will be taken as warranted to reduce the leakage and the system will be then retested. The licensee states its position that this method is equivalent to the helium leak detection method for measuring overall system leakage and for identifying and reducing individual leaks to their lowest practical level.

The licensee states that it has considered the implications of our generic letter on this matter dated October 17, 1979, and our circular IE 79-21, "Prevention of Unplanned Releases of Radioactivity," in its initial selection of systems included in the Fermi-2 leakage reduction program. The licensee also states that it has incorporated into the design of the Fermi-2 facility, measures similar to those described in the NRC documents cited above.

Finally, the licensee states that a number of the systems which must be tested, will not be available for testing until after the initial stages of heatup. For example, the high pressure core injection system and the reactor core isolation cooling system require nuclear steam to be tested. Additionally, the reactor water cleanup and process sampling systems will not be operated at the normal reactor pressure (i.e., about 1000 psi) until late in the heatup testing phase. It is estimated that about 50 percent of the required leakage testing and related leakage reduction measures will be completed during the initial heatup phase and Test Condition 2 (i.e., less than 20 percent of full power). The licensee has committed to submit the results of this first half of the Fermi-2 leakage reduction program within two to three weeks after completion of the first portion of these tests. Advance copies of the results of the balance of these tests will be submitted as they become available and the overall report on the Fermi-2 leakage reduction program will be submitted prior to commercial operation.

The effect on operator exposure of leakage of the systems encompassed by the Fermi-2 leakage reduction program on operator exposure will be limited in two additional ways. These systems are located almost entirely within the secondary containment. Accordingly, direct exposure of the operators is avoided since no operator action inside secondary containment is required immediately following

postulated severe accidents or transients involving significant contamination of these systems. Airborne leakage into the secondary containment would be treated by the standby gas treatment system (SGTS) before being released, thereby reducing the indirect exposure to operators from this potential source. The licensee's position is that the Fermi-2 leakage reduction program meets the intent of NUREG-0737.

Based on our review of the licensee's letter on this matter, we have determined that the proposed Fermi-2 leakage reduction program meets the intent of NUREG-0737 and, therefore, is acceptable. We find that the licensee's commitment to submit the initial leak-test results in accordance with the schedule described in its letter dated June 3, 1985, is acceptable. Accordingly, we find this matter is now resolved.

APPENDIX A

CONTINUATION OF CHRONOLOGY OF RADIOLOGICAL SAFETY REVIEW

March 1, 1985	Letter to applicant concerning Fermi-2 Containment Purge and Vent Valve Operability.
March 4, 1985	Letter from applicant transmitting additional information from turbine generator manufacturer.
March 5, 1985	Letter from applicant concerning clarifications of operational QA program.
March 6, 1985	Letter from applicant concerning purge valves - followup information.
March 6, 1985	Letter from applicant concerning suppression pool temperature measurements.
March 6, 1985	Letter from applicant transmitting additional information on diesel generators.
March 7, 1985	Letter from applicant concerning status of remaining equipment qualification work.
March 9, 1985	Letter from applicant concerning additional change to draft Fermi-2 technical specification for diesel generators.
March 9, 1985	Letter from applicant requesting issuance of operating license by March 15, 1985 for full load on March 18, 1985.
March 12, 1985	Letter from applicant requesting change to draft Fermi-2 Technical Specifications.
March 14, 1985	Letter to applicant transmitting revised draft license for Fermi-2.
March 14, 1985	Letter from applicant concerning clarification of diesel generator commitments.
March 15, 1985	Letter from applicant transmitting additional information relative to diesel generator commitment.
March 15, 1985	Letter from applicant concerning correction to letter to NRC dated March 6, 1985 on diesel generator - Reference 2 should have been numbered NE-85-0460.

March 20, 1985	Letter to applicant transmitting Facility Operating License NPF-33 for fuel load and 5% of power issued with Technical Specifications Appendices A & B, Indemnity Agreement, F. R. Notice and Environmental Assessment for 40 years of operating plant from date of low power operating license.
March 21, 1985	Letter to applicant transmitting 2 copies of Supplement No. 5 to the Safety Evaluation Report (NUREG-0798 Supplement No. 5).
March 21, 1985	Letter from applicant transmitting Amendment 6 to the Security Plan.
March 28, 1985	Letter to applicant transmitting 29 copies of Supplement No. 5 to the SER (NUREG-0798 Supplement No. 5).
April 2, 1985	Letter from applicant transmitting additional information relative to inservice testing program.
April 11, 1985	Letter from applicant transmitting the Monthly Operating Status Report for March 1985.
April 15, 1985	Letter to applicant requesting permission to reprint copyrighted material submitted by NUS on portable liquid radwaste system.
April 15, 1985	Letter from applicant transmitting the Annual Financial Report for 1984 for Wolverine Power Supply Cooperative and Detroit Edison Company.
April 22, 1985	Letter from applicant concerning testing of control center emergency filtration system.
April 30, 1985	Letter to Cygna and applicant (Detroit Edison) concerning clarification of Cygna's Amended Report on the Fermi-2 IDVP.
May 7, 1985	Letter from applicant concerning Resubmittal of Fermi 2 Vacuum Breaker Report.
May 7, 1985	Letter from applicant concerning Schedule for License Condition 2.C(7).
May 16, 1985	Letter from applicant concerning Post-Accident Sampling and Analysis of Plant Effluents (Radioiodines and Particulates).
May 17, 1985	CYGNA letter concerning NRC Review Questions and Comments Independent Design Verification Program for Fermi-2.
May 17, 1985	Representatives from NRC & Detroit Edison Company meet in Bethesda, Md. to discuss the interaction between the design review of the control room and the procedures generation package (Supplement 1 to NUREG-0737).

May 20, 1985	Letter to applicant transmitting the Fermi-2 Draft Full Power License.
May 21, 1985	Letter from applicant concerning Edison Schedule for Response to Items in Supplement 1 to NUREG-0737.
June 3, 1985	Letter from applicant concerning additional information regarding Fermi 2 Leakage Reduction Program.
June 3, 1985	Letter from applicant concerning comments on SSER 5.
June 6, 1985	Letter from applicant requesting a Technical Specification Change.
June 14, 1985	Letter from applicant concerning Emergency Preparedness Exercise for Fermi 2.
June 18, 1985	Letter from applicant concerning medical arrangements for contaminated injured individuals.
June 21, 1985	Letter from applicant concerning additional Technical Specification Changes.
June 24, 1985	Letter from applicant concerning additional information concerning electrical separation.
June 27, 1985	Letter from applicant concerning Additional Technical Specification Change.
June 28, 1985	Letter from applicant concerning performance on non-brittle waste forms at burial sites.
June 28, 1985	Letter from applicant concerning Representative Sample No. 11 of the Electrical Separation Review.
June 28, 1985	Letter from applicant concerning Primary Containment Coatings Transmittal of Final Report No. DECO-12-2191, Revision 4, Evaluation of Containment Coatings.
July 3, 1985	Letter from applicant Concerning Emergency Preparedness Exercise for Fermi 2.
July 3, 1985	Letter to applicant concerning Fermi-2 Solid Radwaste PCP.
July 5, 1985	Letter from applicant concerning Detroit Edison Updated Status to NRC Generic Letter 83-28.
July 5, 1985	Letter from applicant concerning Schedule for Installation of Independent Alternate Shutdown System.
July 5, 1985	Letter from applicant concerning Response to NRC Generic Letter 85-07 Integrated Schedule for Fermi 2.

July 22, 1985	Letter to applicant concerning Environmental Assessment and Finding of No Significant Impact - Exemption from 10 CFR Part 50, Appendix E - Fermi-2.

APPENDIX E

SAFETY EVALUATION REPORT

ON THE

FIRE PROTECTION PROGRAM

FOR THE FERMI-2 FACILITY

Appendix E in Supplement No. 5 to the SER replaced and superseded Appendix E to the SER issued in July 1981 and the revised Appendix E in Supplement No. 2 to the SER issued in January 1982 with one exception as noted in Supplement No. 5. This supplement provides additional information to Appendix E of Supplement No. 5.

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I INTRODUCTION

C. Supplementary Information

Based upon additional information submitted by the licensee, we have evaluated a deviation request regarding three fire-resistant doors, the hydrostatic testing of the yard piping and the installation of additional fire detectors. We have also rereviewed the interim administrative procedures to be implemented until the independent alternate shutdown system is declared operational. Our evaluation of these matters is contained in revisions in this supplement to Appendix E of Supplement No. 5.

II FIRE PROTECTION SYSTEMS DESCRIPTION AND EVALUATION

A. Water Supply Systems

In its letter dated March 4, 1985, the licensee stated that since it installed the fire protection yard piping about ten years ago, the acceptance criteria for the hydrostatic leak test to be run in May 1985 would be a leakage of 264 gallons over a two-hour period at a system pressure of 200 psi. This acceptance criteria was proposed by the licensee based on guidance in NFPA 24 and the Factory Mutual Handbook, with due consideration for the age of this system. The hydrostatic test was performed on May 31, 1985, with the system pressurized at between 200 to 213 psi for two hours. During the test, the system was allowed to stabilize for two hours. The initial leakage was unacceptable. Subsequently, valves within the test boundary were checked for leaks and the packings on three valves were tightened and the cross-tie valve was closed. The leakage measured over the next two hours was 254 gallons. The licensee deemed this leakage satisfactory since it was less than the acceptance criteria.

We conclude that both the acceptance criteria and the measured leakage are acceptable. Accordingly, we find that the applicant has satisfied license condition 2.C(9)(e) with regard to the hydrostatic testing of the fire protection yard piping.

D. Fire Detection Systems

The licensee submitted additional information in its letter dated June 18, 1985, regarding its proposed installation of ionization fire detectors which are below the drop ceiling and behind the control panels in the Fermi-2 control room. The licensee's position is that it has satisfactorily addressed our concerns regarding the placement of fire detectors in the control room based on: (1) the installation of these additional ionization detectors; (2) the ionization smoke detectors in each panel; (3) the continuous manning of the control rooms; and (4) the prior modifications it made above the drop ceiling to meet the requirements of NFPA 72E.

We have confirmed on July 9, 1985, that these additional ionization fire detectors have been satisfactorily installed in the control room as described in the licensee's letter dated June 18, 1985. On this basis, we find that the

licensee has addressed our concerns regarding the control room and that this matter is now resolved.

III OTHER ITEMS RELATED TO FIRE PROTECTION PROGRAMS

B. Fire Doors and Dampers

In its letter dated June 18, 1985, the licensee requested a deviation from the requirement to provide a three-hour fire-rated door in the control room complex (i.e., fire door T3-6). We had previously approved in Supplement No. 5 to the SER, a deviation from the requirement to install R3-13 as a three-hour fire-rated door; R3-13 was accepted as a 1.5-hour fire-rated door. Our basis for accepting this deviation request was that the acceptance criteria of UL10B for a 1.5-hour rating had been met.

The licensee states in its letter of June 18, 1985, that door T3-6 separates the control room from the tagging center located on the third floor of the turbine building at elevation 643'-6". The licensee further states that door T3-6 is constructed similar to door R3-13 and states that it considers that this door can be encompassed within the scope of the Underwriters Laboratory (UL) test conducted for the prototypical door for door R3-13.

We find that the fixed combustibles in the turbine building tagging center are negligible. Furthermore, the Fermi-2 turbine is located some distance away behind a concrete shield wall. A fire hazard due to the presence of lube oil is minimized since this lube oil is enclosed in fire-rated rooms having automatic sprinkler protection. Additionally, early warning fire detection has been installed in the Fermi-2 turbine building which will provide reasonable assurance that a fire will be discovered in its incipient stage and be extinguished by the fire brigade.

Based on the similarities between doors R3-13 and T3-6 noted above and the satisfactory results from the UL fire test on prototypical door R3-13, we find that door T3-6 can be considered to be a 1.5-hour fire-resistant door. It is our position that the 1.5-hour fire-resistant door, T3-6, will provide adequate protection in the event of a fire in the turbine building area, against fire penetrating the fire barrier enclosing the control room complex. Accordingly, we find that the installation of the 1.5-hour fire-resistant doors, R3-13 and T3-6, in the control room complex is an acceptable deviation from our guidelines in Section D.1(j) of Appendix A to BTP ASB 9.5-1.

In its letter dated June 18, 1985, the licensee also stated that two doorways are protected by special-purpose doors, R1-8 and R1-11. These special-purpose doors are either blast-resistant (R1-11) or water-tight (R1-8) in addition to providing fire protection. We have reviewed the design and construction of these doors, and their respective locations within the plant to determine their fire-resisting capability, based on the relative fire hazard in the area where they are installed. The doors are constructed of heavy weight, reinforced steel plates which are thicker than those used in approved fire doors. The latching mechanisms have either five latching points (R1-8) or four latching points (R1-11). If a fire occurred in the vicinity of one of these special-purpose doors, the mass of the door provides a thermal heat sink which would require a significant fire exposure to raise the temperature of the steel to its yield point. Unequal thermal expansion of the door and its frame

which could cause warping of the door, will be prevented by the multiple-point steel locking pins. The locations within the plant where the special-purpose doors are installed do not contain significant amounts of combustibles which would provide a fire exposure capable of causing failure of the doors.

Based on our evaluation, we conclude that the licensee's requested deviation for the special-purpose fire doors, R1-8 and R1-11, is an acceptable deviation from Section C.5.a of the fire protection guidelines contained in BTP CMEB 9.5-1.

VII INDEPENDENT ALTERNATE SHUTDOWN CAPABILITY

A. Introduction

We have rereviewed the interim administrative procedures for ensuring the availability of the emergency equipment service water (EECW) system in the event of spurious actuations resulting from a postulated fire. Based on this rereview, we are defining a second return flow path to the ultimate heat sink. This is discussed in Section VII.D below.

D. Interim Operation

In this section of Appendix E in Supplement No. 5, we stated on Page E-23 that we required the licensee to operate the Fermi-2 facility with power removed from the division 1 coling tower bypass isolation valve. This requirement was incorporated into license Condition 2.C(9)(d) in the Fermi-2 low power license (NPF-33). This condition specified precisely which valve should have power locked out during normal plant operation. The purpose of this was to guard against spurious closure due to "hot shorts" in the event of a fire in the Fermi-2 facility.

We have concluded from our rereview that it is possible to define an alternate return flow path for the EESW system through the RHR service water system to the ultimate heat sink. Establishing this second flow path offers greater flexibility in operation and maintenance of the RHR service water system and ultimate heat sink components. Accordingly, we find that this approach will improve the safety of the Fermi-2 facility.

On this basis, we find that an EESW flow path can also be assured by opening and removing power from the division 1 isolation valves, E1150-F604A/F605A, which lead to the cooling tower spray nozzles. Our position on this matter is that execution of these actions will also satisfy the requirements of license Condition 2.C(9)(d) of the Fermi-2 full power license, NPF-43.

XI CONCLUSION

Based on our re-evaluation in Appendix E to Supplement No. 5 to the SER and our additional evaluation in this supplement, we find the licensee's proposed fire protection program with the deviations we have approved in Supplement No. 5 and in this supplement, is still in conformance with the guidelines of Appendix A to BTP ASB 9.5-1, Appendix R to 10 CFR Part 50 and General Design Criterion 3 of Appendix A to 10 CFR Part 50. On this basis, we find the Fermi-2 fire protection program to be acceptable. We will condition the Fermi-2 full power operating license to include the commitments made by the licensee.

APPENDIX G

NRC STAFF CONTRIBUTORS

This supplement to the SER is a product of the NRC staff. The NRC staff members listed below were principal contributors to this report.

NRC Staff

Name	Branch
W. Brooks	Core Performance
R. Ferguson	Chemical Engineering
J. Gilray	Quality Assurance
C. Hinson	Radiation Assessment
F. Kantor	Emergency Preparedness
W. LeFave	Auxiliary Systems
J. Levine	Meteorology and Effluent Treatment
J. Mauck	Instrumentation and Control Systems
P. McLaughlin	Licensee Qualification
C. Nichols	Meteorology and Effluent Treatment
G. Staley	Environmental and Hydrologic Engineering
J. Stang	Operating Reactors Branch No. 5
G. Thomas	Reactor Systems
M. Wangler	Radiation Assessment
S. West	Chemical Engineering

APPENDIX R

SAFETY EVALUATION REPORT

ON THE

INDEPENDENT DESIGN VERIFICATION PROGRAM

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I INTRODUCTION

From September 1982 to December 1982, we discussed with the licensee the need for conducting an Independent Design Verification Program (IDVP). Our intent was to gain some assurance from a third party that the design criteria proposed by the licensee for the Fermi-2 facility and approved by us had been properly implemented by the licensee and its consultants in the design of the Fermi-2 facility. The licensee proposed in December 1982 to have Cygna Energy Services perform this IDVP; we agreed with this selection.

A proposed program for the Fermi-2 IDVP was submitted in December 1982 and it was mutually agreed that the RHR building complex would be the subject of this IDVP on the basis of the following criteria:

a. Interfaces (in parallel and in series)
The scope should involve a number of interfaces between various contractors both operating in parallel time and sequentially over a long time span.

b. Cross-Section of Disciplines and Plant Features
The scope should provide for a review of a cross-section of disciplines and plant features.

c. Important to Safety (Safe-Shutdown Path)
The scope should involve systems or elements important to safety.

d. Design Changes
The scope should be large enough and complex enough such that it involves the normal in-process design changes which are seen routinely in the construction of nuclear facilities.

e. Involves S&L
The scope should include elements which involved Sargent & Lundy in the design process.

Cygna presented its original report on the IDVP in June 1983. Based on a number of meetings and letters requesting additional information from Cygna, the original report by Cygna was supplemented in November 1983 and in November 1984.

The intent of our review of Cygna's IDVP report and its two supplements was to determine if the depth and scope of Cygna's independent review was sufficient to provide reasonable assurance that its conclusions regarding the design of the Fermi-2 facility, including the design control process itself, were valid.

The thrust of Cygna's review of the design control process was to: (1) determine whether the licensee design control activities, as defined in its design control program, satisfy the licensing commitments made for the Fermi-2 facility; (2) determine whether the design control activities of selected contractors used by the licensee satisfied both the appropriate contract commitments and the design criteria in the Fermi-2 FSAR; and (3) evaluate the implementation by the licensee and selected contractors of the design control commitments as shown in their program documentation.

Cygna accomplished these goals by conducting a "vertical" technical design review consisting of: (1) a multi-disciplined technical review consisting of three elements of the residual heat removal (RHR) system, including the mechanical, electrical and civil design and the interface activities of the licensee and those contractors who assisted in the design; and (2) a plant walkdown to verify that the final design of the three elements are reflected in the "as-built" configuration.

The three elements of the RHR system referred to above are: (1) the primary shutdown path suction line components from the interface with the recirculation system up to and including the outboard isolation valve; (2) the primary components in the fluid path of the RHR service water system to one of the two RHR cooling towers; and (3) one of the RHR cooling towers.

Our evaluation in this appendix of Cygna's independent review focuses on three disciplines; e.g., mechanical engineering, structural engineering and quality assurance. We concluded from our review of Cygna's IDVP report that we agreed with Cygna's conclusion that the electrical systems were properly designed. Since the electrical systems represented a small portion of Cygna's independent effort, we did not rely on a review of the electrical systems to provide a basis for our evaluation of Cygna's independent review.

II MECHANICAL ENGINEERING

A. Introduction and Discussion

We reviewed those potential finding reports (PFRs) identified in Section 7.6 of the final Cygna report to assess whether we could reach conclusions similar to those of Cygna that the PFRs have been reasonably resolved. In the area of piping and pipe supports, Cygna identified PFR-06 and PFR-07. Both of these potential finding reports are related to the design of containment penetration flued heads.

In PFR-06, Cygna found that in the design report for a containment penetration flued head, the stress summary for the emergency condition (Service Level C) compared the maximum stress intensity to a stress allowable of 3.0 Sm. The maximum stress included the combination of peak, non-linearized primary membrane, primary bending and secondary stress intensities. The ASME Code requires a primary stress evaluation for level C service limits to meet a stress allowable of 1.8 Sm (no secondary stresses are required to be included). Furthermore, the ASME Code requires for level A and B service limits, an evaluation of primary plus secondary stresses to meet a stress allowable of 3.0 Sm with thermal stresses included. The concern identified by Cygna was that the required ASME Code evaluation of the maximum primary membrane plus primary bending stress intensity might exceed the 1.8 Sm allowable for the emergency condition.

Cygna's review of the summaries of all the flued heads found that there was sufficient design margin to preclude any impact on safety except for the flued heads identified as X-13A & B. Cygna stated that for flued heads X-13A & B, an additional evaluation for the emergency condition should be conducted to assure compliance with the ASME Code allowable stresses.

The licensee issued a project directive (EF2-63,587 dated April 13, 1983) instructing its engineering staff that an ASME Code compliance analysis be performed for all flued heads as part of an as-built verification program. Based on the implementation of the project directive, Cygna concluded that PFR-06 could be closed.

Similarly, Cygna found in PFR-07, that the analysis of the flued head anchor structure did not adequately document the basis for considering only two of the many possible load combinations. Cygna's concern was that another load combination could result in higher stresses. In the same project directive issued for PFR-06, the licensee instructed its engineering staff to select several load combinations for evaluating compliance with the ASME Code when conducting the as-built analysis of the flued heads so that the various parts of the structure are loaded as severely as possible using an appropriate and reasonable basis. Furthermore, the licensee's project directive instructed its staff that the logic used to arrive at the set of loading conditions should be documented. Based on the implementation of the project directive by the licensee's engineering staff, Cygna concluded that its concerns regarding PFR-07 were resolved.

Our initial evaluation of PFR-06 and PFR-07 found that Cygna's review identified a deviation from the design methodology for flued heads with respect to compliance with ASME Code requirements. We believe that Cygna's review correctly expanded its scope to include all flued heads. We also conclude that the implementation of the project directive (EF-63,587) will adequately resolve both PFR-06, and PFR-07. In its letter dated July 11, 1984, the licensee provided us with confirmation that the as-built analyses were completed for all flued heads in safety-related systems. These analyses were performed in accordance with ASME Code, Section III NB-3200; the results verified code acceptability. In no instance was the allowable stress limit for the emergency condition found to be exceeded. Based on the results of the as-built analyses satisfying the applicable ASME Code requirements, we consider the potential findings PFR-06 and PFR-07 closed.

We reviewed the observations identified in Section 7.7 of Cygna's final report to determine whether we could reasonably conclude that the observations had been appropriately classified; i.e., whether they could have developed into a potential finding with a potential impact on safety. Our initial review of the observations found that except for PI-01-11, all the observations in the area of piping and pipe supports had been appropriately classified and had no potential safety impact.

In PI-01-11, Cygna found there was no documentation that faulted loads were considered in the piping stress evaluation of the reactor heat removal (RHR) system. The RHR piping is located inside containment and is attached to the reactor recirculation piping. We require that the piping attached to the unbroken loop of the reactor coolant pressure boundary be designed for the dynamic effects of a loss-of-coolant accident (LOCA), including annulus pressurization (AP) loads. It should be noted that in observation PS-01-03, Cygna found that AP loads were included in the RHR pipe support calculations but not in the piping stress calculations.

Cygna considered this observation closed for the following reasons.

a. "Further Cygna review has indicated that the postulated impingement and surge loads on the RHR system should not be considered since the source of the loads is the broken line to which the RHR line is attached."

However, we did not find the justification adequate since this statement addresses only "postulated impingement and surge loads" and does not address annulus pressurization loads. The AP loads can be generated from a double-ended rupture of the main steam, feedwater, or the reactor recirculation piping which is postulated to be broken and which is on the other side of the vessel.

b. Cygna stated, "In evaluating faulted conditions in general, Reference 3.2 (General Electric Design Specification 22A3773), Article 4.5 states '... LOCA does not create temperature or pressure surges in the piping systems of any significance and therefore it is not evaluated for this event.'"

We did not find this justification to be acceptable since this statement addresses only temperature and pressure surges in the piping system and does not apply to the dynamic effects associated with a LOCA (i.e. annulus pressurization loads).

c. Cygna stated, ". . . (General Electric Design Specification 22A3773) also states in Article 4.7 that, 'pipe stress due to Annulus Pressurization is not required to be included in the Code analysis and stress report.'" We found this statement to be irrelevant. Although the GE design specification states that the pipe stress due to AP loads is not required to be included in the ASME Code analysis and stress report, we require that the safety-related piping be designed to accommodate the effects of a postulated accident including loss-of-coolant accidents in compliance with General Design Criterion 4 (GDC 4) of Appendix A to 10 CFR Part 50.

d. Cygna stated, "Supplemental review has revealed that a separate report from the ASME Design Report was generated to assess the impact of annulus pressurization on piping and structures. This approach has been agreed to with the NRC because annulus pressurization was not in the original design basis for Fermi-2. Nevertheless, the piping supports are designed to accommodate the additional loads predicted by this analysis."

We found Cygna had only provided assurance that the piping supports are designed for AP Loads. The adequacy of the supports for AP loads was never an issue with us since in PS-01-03, Cygna found that AP loads were indeed considered for pipe supports but not for piping.

B. Evaluation

As discussed above, we found that Cygna had not provided a reasonable basis for concluding that the the RHR piping had been properly evaluated for faulted (i.e., annulus pressurization) loads. Our concern was that according to Cygna's review procedures as stated in Section 3.3 of the final report, all observations were to have been reviewed by a project team to determine their potential impact on plant safety. It appeared from Cygna's resolution of this observation that Cygna did not evaluate the impact of the observation on plant safety but, rather, appeared to have closed out the observation based on irrelevant statements extracted from a General Electric design specification. Accordingly, we could

not support Cygna's rationale for accepting a deviation from our requirements and believed that further investigation was warranted to assure that the requirements of GDC 4 had been met. Furthermore, we believed that the scope of the investigation should have been expanded by Cygna to determine whether faulted (AP) loads had been considered in the piping stress evaluation for other safety-related piping systems attached to the reactor coolant pressure boundary. We conveyed our concerns in a letter dated March 27, 1984, to W. Jens (DECo) and L.L. Kammerzell (Cygna).

Subsequently, we met with Cygna and the licensee on April 17 and May 11, 1984, to discuss a viable approach for the resolution of the AP issue. During the April 17, 1984 meeting, the licensee indicated that the piping systems were analyzed for AP loads in 1978 as part of a LOCA asymmetric loads assessment study. It was agreed that the licensee should confirm that its previous AP Loads assessment study was still valid since Cygna had identified differences between the as-modelled and as-built piping configurations used for the initial AP loads analysis.

In its letter dated September 27, 1984, the licensee provided the results of its evaluation stating that it had completed a reanalysis of the reactor recirculation and RHR piping for the combination of AP loads and design basis earthquake loads using the as-built piping configuration. This reanalysis showed that all piping stresses are within ASME Code allowables for the faulted condition. All piping support loads were within their load ratings with the exception of one support which exceeded its rating by 4.4 percent. The licensee has made minor modifications to the structural steel for three supports to assure compliance with code allowable weld stress limits. Additionally, the licensee has reviewed the AP analyses of all other large bore piping systems with a nominal pipe size equal to or greater than 4 inches which are connected to the reactor coolant pressure boundary. The analytical model was compared with the as-built configuration and the existing analyses were found to adequately represent the as-built condition. The licensee concluded that for the combined loadings of AP plus the design basis earthquake, there will be no loss of structural integrity of the piping systems.

In its letter to B.J. Youngblood (NRC) and W.F. Colbert (DECo) dated May 17, 1985, Cygna provided its evaluation of the licensee's letter on this matter dated September 27, 1984. Cygna concluded that the structural integrity of the as-built recirculation and drywell piping and their supports would be assured based on the resultant stresses from a combined annulus pressurization and design basis earthquake loading remaining within the Level D service limits (i.e., the faulted condition). Additionally, Cygna supported the licensee's conclusion that the results of the original annulus pressurization analyses for other reactor coolant pressure boundary piping systems would remain valid provided the analyses input accurately reflected the as-built configuration. We concur with Cygna's conclusions. Based on the results presented in the licensee's letter dated September 27, 1984, we conclude that the corrective actions taken by the licensee to address the issue identified in PI-01-11 was appropriate. Accordingly, we find that the technical and safety concerns associated with observation PI-01-11, including the generic implications of the AP loads issue, have been acceptably resolved as a result of the actions taken by the licensee.

C. Conclusion

The objective of the independent design verification program was to assess the overall adequacy of the design and the design control process used for the Fermi-2 facility. With respect to the design control process in the area of piping and pipe supports, we find from our review of the observations and potential finding reports identified by Cygna, that the design control process appears to be adequate. Our conclusion is based on the fact that there appears to be no recurring deviations of a similar nature which could be indicative of an overall inadequacy in the design process.

III STRUCTURAL ENGINEERING

A. Introduction

In Cygna's IDVP report, it indicates that its review encompassed the structural analysis and design of the main structural members of the residual heat removal (RHR) complex building. The scope of this review ranged from an examination of the actual design to the design control activities. The review criteria are a composite of licensing commitments, project design requirements and appropriate industry practice; these review criteria are divided into design control criteria and design criteria.

CYGNA's structural review approach is embodied in the following activities: (1) a review of the appropriate criteria documents; (2) a selection of the controlling load combinations; (3) a review of the seismic analysis; (4) a selection of the major structural elements; (5) a review of the structural analysis; (6) a review of the overall design (7) a review of results and conclusions; and (8) a review of the design drawings.

B. Discussion

Cygna's review was performed by a structural review team. On the basis of the review criteria and the approach cited above, Cygna identified 33 non-conformance items (i.e., observations) in its initial review which might have had a potential safety impact in the structural area. These items ranged from a lack of documentation of the design criteria, improper application of either the loads or the load factor, inadequate structural capacity to poor workmanship in actual construction. The non-conformance items initially identified as observations were then reviewed in more detail to determine if they had any potential safety impact. The result of this review in depth identified only two of the observations as having any potential safety impact; these were then classified as potential finding reports (PFRs). However, after the senior review team's review of these PFRs, Cygna determined that there was no item which had any safety impact. Accordingly, all of the structural PFRs were closed after review by both the project team and the senior review team.

C. Evaluation

We have reviewed Cygna's 33 structural observations and Cygna's rationale for resolving these observations. Cygna has basically used the structural design criteria and methodology established by the licensee in the Fermi-2 FSAR as its review criteria. For any deviations from the licensee's commitments, Cygna

provided reasonable bases to justify such deviations. In some of the areas where we were concerned about the adequacy of the structural design, Cygna provided either more detailed information or its own independent analysis. For those observations which had generic implications, Cygna expanded its scope of review so that the effect of the observed deficiency was assessed. For example, a misinterpretation of the computer analysis could have indicated some shortcomings in the licensee's QA/QC procedure in the design process for the Fermi-2 facility. After an expanded review, Cygna found that out of 42 computer runs, errors of this type occurred five times. However, Cygna verified the structural design for these five cases and found that the design met the design criteria despite these errors. Considering the depth and the extensive nature of Cygna's review of the RHR complex without finding any serious deviations, we agree with Cygna's conclusion that the design and the design control activities for the Fermi-2 facility have been adequately performed in accordance with the licensee's commitments and with standard engineering practice. Furthermore, we agree with Cygna's conclusion that there is reasonable assurance that the public health and safety will be protected. Cygna's overall conclusion is based on the following factors:

1. The design control program in place for the Fermi-2 facility adequately addresses the licensee's commitments and there is objective evidence that this program is being effectively implemented.

2. The licensee's commitment to fully implement a directive issued to its engineering staff to resolve certain potential findings.

3. The licensee's management has demonstrated an active commitment to assure the quality of the design and the safety of the plant.

D. Conclusion

On the basis of our discussions with the Cygna personnel involved in the Fermi-2 IDVP in a number of meetings and on site visit and our favorable evaluation of the responses to our questions regarding Cygna's findings, we find that the structural aspects of the Fermi-2 IDVP has been conducted in a satisfactory manner.

IV. QUALITY ASSURANCE

A. Introduction

Cygna evaluated the design activities of the licensee and Sargent & Lundy, Stone & Webster and General Electric. This review involved an assessment of the accuracy and the completeness of the information at various stages of the design process, including the flow of information from the preliminary design stage to the "as-built" condition. This review process also included collecting design documents and control procedures; developing review criteria, procedures, and checklists; conducting program and design reviews against commitments in the Fermi-2 FSAR; escalating the review process to project review teams and senior review teams; conducting walkdown inspections of the as-built configuration; identifying observations and evaluating these for potential findings and impact on safety; and documenting the results in the IDVP report.

Whenever, during the course of its review, Cygna determined that an item was inadequately addressed, the item was noted as an observation. Each observation which had a potential impact on safety was identified as a potential finding. During its review, Cygna noted 108 observations. Of the 108 observations, 98 had no potential impact on safety. The remaining 10 were identified as potential findings which were eventually resolved and also determined by Cygna not to impact safety.

After completion of its evaluation, Cygna submitted to us their final report, No. 83021-1, which included an executive summary, a description of the program, the results of the assessment, a description of each observation and potential finding, and a description of how each was resolved.

Cygna's overall conclusion was that the design control at the Fermi-2 facility was adequate and appeared to have been successfully implemented resulting in an acceptable design and acceptable as-built conditions.

B. Evaluation

We performed a review of the quality assurance portion of the Cygna final report, including the observations and potential findings to determine their significance and to assess the resolution of each. We met with representatives of Cygna and the licensee on June 15, 1983 and May 11, 1984, to discuss the results of Cygna's evaluation. We concluded that additional background information was needed so that Cygna could complete its original review and we could evaluate Cygna's efforts. Cygna provided a supplement in November 1983 to its original report, clarifying and expanding its basis for resolving the observations and potential findings.

This additional effort by Cygna included an evaluation of each observation to determine if it dealt with a programmatic issue or had a potential for impacting other plant designs. Over one-third of the valid observations required an expanded review to determine the impact on the Fermi-2 design. We concluded from the additional information submitted by Cygna that the report was still deficient in that it did not provide an adequate description of the root causes of the valid observations and potential findings. As a result of this concern and other technical concerns, Cygna performed additional studies and responded by providing the requested additional information in a second supplement in November 1984 to its IDVP report. In this second supplement, Cygna identified the root causes of each observation and potential finding and the generic impact on safety and the acceptability of the overall design.

Our review of this material resulted in requesting Cygna to provide a clarification of the conclusion of certain observations and potential findings identified as having generic implications. We also asked Cygna to provide a correction to the root cause and classification list.

Based on our review of Cygna's IDVP report and its two supplements, we find that the IDVP was structured in a disciplined, controlled manner using procedures, checklists, and multi-tier reviews. Cygna's investigations into the observations and potential findings appear to be thorough, and its conclusions appear to be soundly based. Cygna's overall conclusion is that sufficient assurance exists that the design activities on Fermi-2 facility were adequately and properly performed.

Based on our review of the quality assurance aspects of Cygna's IDVP, we conclude that the IDVP provides additional confidence in the acceptability of the Fermi-2 design.

C. Conclusion

The licensee has agreed to add the lube oil system and the combustion air intake system and make other minor clarifications to the list of items subject to the operational QA program. Cygna has agreed to provide a clarification of its overall conclusions related to the acceptability of those observations identified as potential findings. Cygna also agreed to update its root cause classification list by categorizing the root cause of the design control observations.

We will confirm the completion of these items in a future supplement to the SER. In the interim, we find that the quality assurance aspects of Cygna's independent review provide reasonable assurance that its conclusions are valid.

V. NRC SUMMARY EVALUATION AND CONCLUSION

On the basis of our review of Cygna's IDVP report and our meetings with Cygna, we conclude that the depth and scope of the IDVP conducted by Cygna provide reasonable assurance that its conclusions regarding the design of the Fermi-2 facility and the design process itself, are valid.

APPENDIX S

SAFETY EVALUATION REPORT

ON THE

CHANGES IN THE FERMI-2 TECHNICAL SPECIFICATIONS

I. INTRODUCTION

In its letters dated June 6, June 21 and June 27, 1985, the licensee requested a number of changes in the Fermi-2 Technical Specifications which were issued as Appendix A (NUREG-1089) to the Fermi-2 low power operating license, NPF-33. This appendix to Supplement No. 6 contains our evaluation of the changes proposed by the licensee. With one exception, we have found the proposed changes to be acceptable with some modifications. We have denied the licensee's proposed changes to the surveillance requirements for fire-rated assemblies.

Where possible, we have provided our evaluation of the proposed technical specifications in the order in which various features of the plant are discussed in the SER. For example, the breakwater is evaluated in Chapter 2 of the SER while fire protection is evaluated in Chapter 9. Our evaluation is subdivided into the subject matter (e.g., Core Performance) affected by the specifications.

II. EVALUATION OF PROPOSED CHANGES

A. Hydraulic Engineering

Table 3.7.3-1

In its letter dated June 6, 1985, the licensee proposed a change in the control elevation of survey point 12A from 581.66 feet to 581.86 feet. Since this change is correcting a typographical error, we find the proposed change acceptable.

B. Core Performance

Table 1.2, Footnote***

In its letter dated June 6, 1985, the licensee proposed that this footnote be altered to include the withdrawn control rod within the footnote to make it consistent with the revised Specification 3.9.10.1 discussed below. We find this acceptable.

Table 3.3.1-1, Footnote (c)

The proposed change would replace the present Footnote (c) with the following: "Unless adequate shutdown margin has been demonstrated, the 'shorting links' shall be removed from the RPS circuitry prior to and during the time any control rod is withdrawn." This change makes the footnote consistent with revised Specification 3.9.2 and is acceptable, provided that the words "per Specification 3.1.1" are inserted after "has been demonstrated." The licensee has agreed to this addition.

Specifications 3.4.1.1

The proposed change to this specification is intended for clarification and does not alter the requirements of the specification. On this basis, we find the proposed change acceptable.

Specification 3/4.9.2

This proposed change would require that "shorting links" be removed from the SRM channels until such time as an adequate shutdown margin has been demonstrated.

This change is requested to reduce the number of "spurious" scrams produced by the SRM channels when the tripping of only one channel is required to produce a scram. The coincident scram would still be available and would provide sufficient protection since adequate shutdown margin has been previously demonstrated in an earlier test. We find the proposed change to be acceptable provided the words "per Specification 3.1.1" are inserted after "has been demonstrated" in Specifications 3.9.2.e and 4.9.2.d. The licensee has agreed to this insertion.

Specification 3.9.5

The proposed change is intended for clarification and does not change the content of the specification. On this basis, we find the proposed change acceptable.

Specification 3.9.10.1

The proposed change to this specification provides a clarification which distinguishes between a withdrawn control rod and a removed control rod. This does not change the intent of the specification and is acceptable on this basis.

Specification 3.10.3

The proposed change to this specification is required to make it compatible with the changed proposed for Specification 3.9.2. On this basis, we find the proposed change acceptable.

C. Instrumentation and Control Systems

Table 2.2.1-1

Table 3.3.1-1

Specification 3.9.2.c/4.9.2.d

Specification 3.10.3.a

In its letters dated June 6 and June 21, 1985, the licensee proposed changes to these portions of the Fermi-2 Technical Specifications. The proposed changes reflect corrections and clarifications and do not change the substance of the specifications. On this basis, we find the proposed changes acceptable.

D. Fire Protection

By letter dated June 6, 1985, the applicant requested an amendment to the Fermi-2 Technical Specification concerning fire detection instrumentation, low-pressure carbon dioxide fire suppression systems, and fire-rated assemblies.

Table 3.3.7.9.1

In its letter dated June 6, 1985, the licensee proposes to revise 3.3.7.9.1. This revision will incorporate the fire detectors installed to comply with licensing Condition 2.C(9)(e) of the Fermi-2 low power license, NPF-33, and to correct a typographical error on page 3/4 3-69. The proposed changes which are additions to the existing list, reflect actual plant conditions as approved in Appendix E to Supplement No. 5 to the SER. Accordingly, we find that the

fire detectors should be added to Table 3.3.7.9.1. Based on our evaluation, we find that the licensee's proposed changes to Table 3.3.7.9.1 to include the additional fire detection instrumentation, is acceptable.

Specification 4.7.7.3.2.a

The licensee proposes to increase the upper limit pressure rating shown in Specification 4.7.7.3.2.a. from 315 psig to 330 psig. The proposed change reflects the manufacturer's (Chemetron) recommendation for the low-pressure carbon dioxide fire suppression system. Additionally, the tolerance for equipment accuracy is on the conservative side and, therefore, should be made. Based on our evaluation, we find that the proposed change to the upper limit pressure rating of the low-pressure carbon dioxide system from 315 psig to 330 psig, is acceptable.

Specification 4.7.8.2.a

The licensee proposes to change the action and surveillance requirements for fire doors equipped with electrical supervision. The present Specification 4.7.8.2.a. is intended to determine if a fire door is inoperable in the event its related supervision system channel is inoperable. Under this condition, Specification 3.7.8.a. requires establishment of an hourly fire watch patrol. Since the proposed change which eliminates the requirement for establishment of a fire watch patrol, is a deviation from the Standard Technical Specifications and the licensee has not justified this deviation, we find this proposed change to be unacceptable.

E. Auxiliary Systems

Table 2.2.1-1 and Bases 2.2.1.8

The licensee has proposed changes to Table 2.2.1-1, "Reactor Protection System Instrumentation Trip Setpoints," in its letter dated June 6, 1985. These proposed changes revise the units of the trip setpoints of the high scram discharge water level float switch and the level transmitter (and their associated allowable values) from gallons of water to measured elevations in feet and inches. The revision to Bases 2.2.1.8 has been proposed to keep the bases section of the specifications consistent with the proposed setpoint revision. The proposed changes provide for efficient and accurate surveillance testing since the elevations (feet, inches) can be established with greater precision than a water volume and eliminates the need to measure volumes of water during the surveillance. Based on our review of the proposed changes, we conclude that they do not change the actual trip setpoints but only the units of the measured variable and are, therefore, acceptable.

Specification 4.1.3.1.4

In its letter dated June 6, 1985, the licensee has proposed changes to the surveillance requirements of Specification 4.1.3.1.4 regarding the scram discharge volume operability. Specifically, the proposed change eliminates the requirement that the scram discharge volume vent and drain valves be demonstrated operable when "the control rods are scram tested from a normal control rod configuration of less than or equal to 50 percent rod density." The proposed change also eliminates the footnote associated with the 50 percent rod density requirement.

The proposed change would allow the vent and drain valves to be determined "operable" without the significant operational impact involved in the present requirement which adds between eight and twelve hours to the critical path following a refueling outage. Additionally, the scram resulting from the present test requires the performance of other surveillances which can result in personnel exposure to radiation. In particular, the requirements to verify proper float switch actuation requires plant operating personnel to be in close proximity to the scram discharge volume to perform a test which would otherwise not be required.

The intent of the 50 percent rod density requirement is to provide greater assurance that there are no flow blockages in the scram discharge system. However, other specification requirements provide adequate assurance that the scram discharge volume vent and drain valves are operable and that no blockages exist. Every 18 months (i.e., during the refueling outage), the specifications require the reactor mode switch to be tested which results in a full scram. This test allows the vent and drain valves to be tested to satisfy the requirement that the vent and drain valves close within 30 seconds after receipt of the scram signal and open when the signal is reset. In addition, each control rod is required to be individually scram-timed which will demonstrate that the three-quarter inch line from the hydraulic control unit to the scram discharge volume is free of any obstructions and provides reasonable assurance that the 8-inch diameter scram discharge header is unplugged. Given the diameter of the scram discharge volume header (8 inches) and the diameter to the volume itself (12 inches), coupled with the required tests, we find there is reasonable assurance that the scram discharge volume system will be operable.

Based on our review of the proposed changes and the licensee's justification, we conclude that the individual rod scram tests and the vent and drain valve operability observed during the reactor mode switch test provide reasonable assurance of the operability of the scram discharge volume (i.e., it will be free of any blockage) and the vent and drain valves without the complications and the additional radiation exposure to the plant operating personnel which are associated with the 50 percent rod density test. We, therefore, conclude that the proposed changes are acceptable.

Table 3.3.6-2

The licensee's proposed change to Table 3.3.6-2 "Control Rod Block Instrumentation Setpoints" revises the trip setpoint from 70 gallons of water to 589 feet, 11-1/2 inches, and the allowable value from 90 gallons to 591 feet, 0 inches, to be consistent with the changes made to the reactor trip setpoints of Table 2.2.1-1. Since this change does not revise the actual setpoints and provides greater accuracy as described in our evaluation for Table 2.2.1-1, we conclude the proposed change to Table 3.3.6-2 is acceptable.

Specification 3.9.5

The licensee's proposed revision to the applicability portion of specification 3.9.5 regarding communications during refueling, is a grammatical change only (i.e., the removal of a comma) which clarifies the applicability requirements and is, therefore, acceptable.

F. Organizational Structure

The Detroit Edison Company has requested, by letters dated June 5 and June 21, 1985, changes to the Administrative Controls Section of the Technical Specifications for the Fermi 2 Nuclear Plant. Below are brief descriptions and our evaluations of the changes.

Specifications 6.2.1 and 6.2.2

The proposed changes to the Offsite Organization modify the management within the Nuclear Operations organizational structure by elevating the position of Plant Superintendent to an Assistant Manager level. In addition, the authority for the functions of the Project Management Organization is transferred to Nuclear Engineering and the Plant Organization as appropriate. Consolidation of other responsibilities is reflected in the formation of three other Assistant Manager level positions other than the one for the plant. The General Director-Nuclear Operations Services reflects combining the Nuclear Training, Security, and Administrator functions under one unit head. The assistant Manager-Nuclear Engineering position reflects the combination of the previous Nuclear Engineering and Project Engineering functions from the Construction Project Management Organization under Nuclear Operations Management. Provision is made for an Architect-Engineer to report to this unit head. The position of Assistant Manager-Regulation and Compliance reflects a combination of Quality Assurance, Licensing, the Independent Nuclear Safety Review and the Independent Safety Engineering Group activities under one unit head.

The Onsite Organization is being changed by elevating the position of the Plant Superintendent to an Assistant Manager plus combining under his/her authority, functions which deal with plant modifications and Outage Management. This latter item increases the responsibility of the previous Maintenance Engineer and thus elevates his/her position to a Superintendent level. Appropriate title changes are also made throughout the other sections of the Fermi-2 Technical Specifications to reflect the organizational changes.

The proposed changes to the Offsite Organization reflect a conversion from a construction orientation to an operations orientation. At the same time, support activities are consolidated under three assistant managers and a nuclear operations services department. We find these proposed changes to be logical and designed to streamline support for the operation of the plant. Accordingly, we find the changes acceptable. The changes were discussed in detail with the Region III staff who also found them acceptable.

The principal change to the Onsite Organization elevates the Plant Superintendent to an Assistant Manager and places matters relating to plant modifications and outage management under his/her control. We find this change acceptable as it places the plant operations in a better position to deal with the corporate support elements. This proposed change was also discussed with Region III staff, who found it acceptable.

Specification 6.2.3

In the proposed changes to the Offsite Organization previously discussed above, the Independent Safety Engineering Group (ISEG) functions were transferred under the authority of the new Assistant Manager-Regulation and Compliance. This

required restructuring the ISEG to an organization more similar to the type described in the Standard Review Plan (NUREG-0800) under Section 13.4, "Operational Review." The ISEG will now be composed of at least five dedicated, full-time engineers with appropriate experience, education and background. The ISEG will conduct reviews of plant operating experience and make recommendations to improve safety operations.

The changes to the ISEG are acceptable with the addition of the following words:

> Add the following phrase to the last sentence in Specification 6.2.3.2: "..., at least one year of which experience shall be in the nuclear field."

This nuclear experience qualification requirement is necessary to assure that ISEG members have adequate nuclear experience to perform safety evaluations on nuclear related systems, procedures, and components.

Specification 6.5.1

The membership of the Onsite Review Organization (OSRO) is proposed to be reduced from 11 to 9 members. The members eliminated are the Assistant Operations Engineer, the Administrator, and the Assistant to the Superintendent. The licensee has proposed adding the Superintendent of Maintenance and Modifications to the membership.

The proposed changes to the OSRO are acceptable and do not degrade the technical expertise or experience level of the review group.

G. Reactor Systems

The Licensee proposes adding a note to indicate that the differential pressure trip setpoint for the HPCI/RCIC high steam line flow is only a preliminary value for the setpoint and the final value of the setpoint will be determined during the startup test program and submitted for our review. We normally accept this approach for determining the final value of the setpoint after the startup test program since this will provide more realistic values. On this basis, we find the proposed change acceptable.

Specification 3/4.4.1

The proposed change in the limiting condition for operation is relatively minor. The proposed revision provides clarification and removes some ambiguity. On this basis, we find the proposed change acceptable.

Specification 3/4.4.2

The proposed change in wording clarifies the action statement with respect to the LCO. On this basis, the proposed change is acceptable.

Specification 3/4.5.1 and 3.5.1

The proposed addition of the footnote is intended to recognize that the RHR loops may be aligned in the shutdown cooling mode as required by Specification 3.4.9.1. While in this mode, remote manual operation of the suppression pool suction valve

is required for LPCI injection. The shutdown cooling mode of the RHR can be established only when the pressure and temperatures are below 150 psig and 330°F. Manual operation of the suppression pool suction valves is acceptable for LPCI operation during these conditions.

Specification 4.5.1.b.3 and c.2.a

This proposed change requires that the HPCI pump discharge pressure be greater than or equal to 1100 psig during surveillance testing at 1000 psig and 265 psig during surveillance testing at 165 psig. These pump discharge pressure values were derived from the FSAR requirements to throttle the pump discharge pressure to 100 psi above reactor pressure during startup injection tests to the condensate storage tank in order to compensate for potential line losses when injecting into the reactor pressure vessel. The 100 psi value is a conservatively high estimate of the line losses. The actual line losses, which will be measured during the Startup Test Program, will be used in future surveillance testing. In addition, the proposed revision makes the HPCI specification more consistent with the wording of the 1000 psig RCIC specification. We normally accept this approach for determining the final values after completion of the startup program since it provides more realistic values. On this basis, the proposed change is acceptable.

Specification 4.7.4.b

The proposed change provides clarification that the test flow path system head must include an allowance for the injection line losses and achieves consistency with the proposed wording for the other HPCI and RCIC flow tests. On this basis, the proposed change is acceptable.

Specification 4.7.4.c.2

The present specification does not specify a pump discharge pressure for the 150 psig RCIC surveillance test. The proposed revision would make the 150 psig specification consistent with the 1000 psig RCIC specification. The proposed increase for the steam supply pressure tolerance is needed to allow for the difficulty in control during the surveillance at such low pressures. On this basis, the proposed change is acceptable.

H. Meteorology and Effluent Treatment

In its letters dated June 6 and June 27, 1985, the licensee proposed changes to the Fermi-2 Technical Specifications to be issued with the Fermi-2 full power operating license. This evaluation addresses the proposed changes to Table 3.3.7.1, as described in the letter of June 27, 1985, and Section 3.3.7.3.a, Table 3.3.7.11-1, and Sections 3.7.2, 3.11.2.7/4.11.2.7.2, 4.11.4.2, and 6.9.1.8 as described in the letter of June 6, 1985. We find that these proposed changes provide either corrections or clarifications and are of minor administrative nature. We also find that the proposed changes are in compliance with our requirements in our regulations. Furthermore, the proposed changes will not remove or relax any existing requirement related to the probability or consequences of accidents previously considered. Finally, the proposed changes will not remove or relax any existing requirement needed to provide reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner. On this basis, we find these proposed changes to be acceptable.

I. Containment Systems

Specification 4.6.6.1.a

Specification 4.6.6.1.a pertains to the operability test which is required to be performed on the drywell and suppression chamber hydrogen recombiner. As it presently reads, the requirement consists of "...verifying during a recombiner system functional test that the minimum heater sheath temperature increases to greater than or equal to 1150°F within 60 minutes. (Also) Maintain $\geq$ 1150°F for at least 2 hours."

The licensee proposed in its letter dated March 12, 1985, to change the location of the temperature measurement from the heater sheath to the heater outlet. The requirement for temperature measurement is to remain unchanged. The proposed change to the Fermi-2 Technical Specifications would extend the time elapsed from the beginning of the test until the required temperature must be reached from 60 minutes to 75 minutes. This increase in elapsed time is consistent with the assumptions used in the licensee's analysis of the loss-of-coolant accident (LOCA). The proposed change would require that the prescribed temperature be maintained at the heater outlet for one hour instead of two hours as presently required so as to reduce the operating time on the heaters. The licensee states that this one-hour time period is sufficiently long to verify stable operations which is the test objective.

Based on our evaluation of these proposed changes, we conclude that they provide an equivalent procedure for verifying the recombiner operating characteristics. On this basis, we find the proposed changes to be acceptable.

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Supplement No. 6 to the Safety Evaluation Report (SER) related to operation of the Fermi-2 facility addresses items pertinent to the issuance of the full power license for Fermi-2.

The Fermi-2 facility is located on Lake Erie in Monroe County, almost 8 miles east-northeast of Monroe, Michigan.

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