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10CFR50.73

November 30, 1994  
NRC-94-0112

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Reference: Fermi 2  
NRC Docket No. 50-341  
NRC License No. NPF-43

Subject: Licensee Event Report (LER) No. 94-003-02

Please find enclosed LER No. 94-003-02, dated November 30, 1994, for a reportable event that occurred on October 20, 1994 and subsequent dates. A copy of this LER is also being sent to the Regional Administrator, USNRC Region III.

The following commitments are made in this LER:

- 1) The applicable procedures for ECCS standby components, RPS scram trip bypass logic, RPS scram trip bypass prevention logic, RPS scram trip string individual logic components, and RPS scram discharge volume vent and drain pilot solenoids will be revised by February 15, 1994.
- 2) The Main Steam Isolation Valve Leakage Control System testing and Primary Containment valve verification revised procedure will be performed prior to startup.
- 3) A supplement to the LER is expected to be issued by February 16, 1995. It will include a finalized cause of event and corrective actions.

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A 10 day extension for submittal was requested and approved by NRC Region III. If you have any questions, please contact Elizabeth A. Hare, Senior Compliance Engineer, at (313) 586-1427.

Sincerely,

*Robert M. Leon*

Enclosure: NRC Forms 366, 366A

cc: T. G. Colburn  
J. B. Martin  
M. P. Phillips  
P. L. Torpey  
A. Vogel

Wayne County Emergency  
Management Division

### LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNRB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Fermi 2	DOCKET NUMBER (2) 05000-341	PAGE (3) 1 OF 11
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TITLE (4)  
Inadequate Logic Functional Tests

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
10	20	94	94	003	02	11	30	94	FACILITY NAME	05000
									FACILITY NAME	05000

OPERATING MODE (9)	POWER LEVEL (10) 000	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
		20.402(b)			20.405(c)			50.73(a)(2)(iv)		73.71(b)
		20.405(a)(1)(i)			50.36(c)(1)			50.73(a)(2)(v)		73.71(c)
		20.405(a)(1)(ii)			50.36(c)(2)			50.73(a)(2)(vii)		OTHER
		20.405(a)(1)(iii)			X 50.73(a)(2)(i)			50.73(a)(2)(viii)(A)		(Specify in Abstract below and in Ter-L NRC Form 366A)
20.405(a)(1)(iv)			50.73(a)(2)(ii)			50.73(a)(2)(viii)(B)				
20.405(a)(1)(v)			50.73(a)(2)(iii)			50.73(a)(2)(x)				

LICENSEE CONTACT FOR THIS LER (12)

NAME Elizabeth A. Hare, Senior Compliance Engineer	TELEPHONE NUMBER (include Area Code) (313) 586-1427
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS

SUPPLEMENTAL REPORT EXPECTED (14)

<input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH 02	DAY 16	YEAR 95
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On July 15, 1994 during a routine review of surveillance procedure 42.302.02, "Calibration and Logic System Functional Test of Division 1 4160 Volt Emergency Bus 64B and 11EA Undervoltage Circuits", it was determined that the permissive interlocks for the bus undervoltage relays had not been tested to the degree necessary to fully meet the requirements of Technical Specification section 3.3.3. Further testing deficiencies were identified on September 9, 1994 related to the starting and the loading of the Emergency Diesel Generators.

Additional testing deficiencies were identified on October 20, 1994 related to Core Spray and Residual Heat Removal systems logic functional testing with regards to Technical Specification section 4.3.3.2. Additional testing deficiencies were also identified on November 1, 2, 5 and 10, 1994 related to Reactor Protection logic, Main Steam Isolation Valve Leakage Control System, Remote Shutdown functional testing, Primary Containment manual valves, Alternate Shutdown panel transfer switches, and Low-Low set logic of Safety Relief Valves and Alternate Rod Insertion logic.

The cause of this event can be attributed to procedural deficiencies. Corrective actions include revising the deficient procedures and performing the surveillances, reviewing similar surveillances, creating electrical overlap drawings, and conducting training of procedure authors and technical reviewers.

REQUIRED NUMBER OF DIGITS/CHARACTERS  
FOR EACH BLOCK

BLOCK NUMBER	NUMBER OF DIGITS/CHARACTERS	TITLE
1	UP TO 46	FACILITY NAME
2	8 TOTAL 3 IN ADDITION TO 05000	DOCKET NUMBER
3	VARIABLES	PAGE NUMBER
4	UP TO 76	TITLE
5	6 TOTAL 2 PER BLOCK	EVENT DATE
6	7 TOTAL 2 FOR YEAR 3 FOR SEQUENTIAL NUMBER 2 FOR REVISION NUMBER	LER NUMBER
7	6 TOTAL 2 PER BLOCK	REPORT DATE
8	UP TO 18 -- FACILITY NAME 8 TOTAL -- DOCKET NUMBER 3 IN ADDITION TO 05000	OTHER FACILITIES INVOLVED
9	1	OPERATING MODE
10	3	POWER LEVEL
11	1 CHECK BOX THAT APPLIES	REQUIREMENTS OF 10 CFR
12	UP TO 50 FOR NAME 14 FOR TELEPHONE	LICENSEE CONTACT
13	CAUSE VARIES 2 FOR SYSTEM 4 FOR COMPONENT 4 FOR MANUFACTURER NPRDS VARIES	EACH COMPONENT FAILURE
14	1 CHECK BOX THAT APPLIES	SUPPLEMENTAL REPORT EXPECTED
15	6 TOTAL 2 PER BLOCK	EXPECTED SUBMISSION DATE

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				94	003	02	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

Description of the Event:

- 1) On July 15, 1994 the plant was defueled with reactor temperature at 97 degrees Fahrenheit. During a routine review of surveillance procedure 42.302.02, "Calibration and Logic System Functional Test of Division 1 4160 Volt Emergency Bus 64B and 11EA Undervoltage Circuits", it was determined that the permissive interlocks (IEL) for the bus undervoltage relays (RLY) have not been tested to the degree necessary to fully meet the requirements of Technical Specification section 3.3.3, trip function number 5 for the loss of power load shed logic.

The Technical Engineering group was reviewing procedure 42.302.02 for the purpose of revising it to incorporate an implemented design change package which installed test switches (IS) on the busses. Changes were also being made to the independent verification procedural requirements. In addition, the reviewing engineer was verifying that proper test overlap existed between this procedure and related Instrumentation and Control (I&C) Residual Heat Removal [(RHR)(BO)] system logic functional test procedures as requested by I&C personnel performing overlap reviews.

During the overlap review, the reviewing engineer (utility, non-licensed) determined that neither procedure 42.302.02, which tests load shed electrical components in the RHR logic circuit, nor the related I&C logic functional test procedures fully tested the RHR pump (P) start logic. This part of the logic had not been tested with sufficient overlap to include the conductors which connect the I&C and electrical portions of the circuit. In addition, testing required to verify a switchgear breaker (BKR) cannot be closed following initiation of the undervoltage relay had not been included in the procedures. Engineering personnel concluded that Technical Specification logic functional test requirements had not been met.

Technical Specifications section 3.3.3 Action 35.b requires that an emergency diesel generator [(EDG)(EK)] be declared inoperable when its associated load shed logic is inoperable. Since the load shed logic had not been fully tested it is not considered operable, therefore, all four EDGs were declared inoperable, although they were otherwise functional.

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TEXT (if more space is required, use additional copies of NRC Form 366A) (17)

As a result of further investigation, additional deficiencies have been discovered in the undervoltage logic functional test surveillance procedures. Similar problems were found in the logic functional test surveillance procedures for the other three Engineered Safety Feature [(ESP)(JE)] 4160 volt busses (BU). Test overlap had not included the degraded voltage trip input to the non-interruptible air supply (LE) system isolation logic, the degraded voltage trip input to the bus feeder breaker position, and alternate automatic closure circuits for the EDG output breakers. The engineers also determined that the 480 volt load shed logic had not been fully tested. In addition, Technical Specification acceptance test criteria was not clearly identified in the surveillance procedures as is the usual practice.

It was also found that the EDGs had not been declared inoperable during test runs. When the EDG output breaker is closed the load shed logic is automatically disabled per design, therefore it is rendered inoperable. Since the load shed logic is inoperable during EDG test runs, the associated EDG should be declared inoperable in accordance with Technical Specification 3.3.3 Action 35.b. This was not done. However, because of the short duration of these test runs, normally about two hours, the investigation team could not identify any time where the associated Technical Specification action statements were not met.

Immediate action was taken to fully evaluate the load shed logic surveillance procedures. These procedures have been revised and successfully performed.

- 2) On September 9, 1994, the plant was in Operational Condition 5 when additional electrical surveillance deficiencies were identified. It was determined that the 18 month Loss of Offsite Power (LOP) and Loss of Offsite Power with a concurrent Loss of Coolant Accident (LOP/LOCA) Emergency Diesel Generator (EDG) surveillance procedures did not fully test all of the loads and/or logic required by Technical Specifications 4.8.1.1.2.e.4.b and 4.8.1.1.2.e.6.b.

A technical review of these procedures for EDG 14 was being performed when a potential testing discrepancy was discovered with EDG 12. The EDG 12 procedure had specified verification that the Control Complex Heating, Ventilation and Air Conditioning (CCHVAC) System chiller was running following load shedding and reenergization of the emergency loads. This step was not performed as originally written. Because Division 1 was being used to satisfy Technical Specification operability requirements for core alterations, fuel load was halted.

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TEXT (if more space is required, use additional copies of NRC Form 365A) (17)

An LER Team was formed on September 7, 1994, following the identification of EDG procedure concerns, to determine the extent of the problem. The initial plan involved reviewing the LOP and the LOP/LOCA surveillance procedures, 24.307.01 through .04, for discrepancies. It was determined that the CCHVAC testing concern which prompted this review, although requiring a procedural clarification, did not violate Technical Specifications. Two Division 2 loads, however, were identified during this review on September 9, 1994 that were not being properly tested, Control Room Emergency Lighting and RHR Emergency Equipment Cooler 2. This violated Technical Specifications 4.8.1.1.2.e.4.b and 4.8.1.1.2.e.6.b. The equivalent loads for Division 1 were being appropriately tested by the procedure.

Management was informed of these findings and the investigation was expanded to include all other Technical Specification section 4.8 surveillances. Additionally, remaining cognizant of past procedural overlap issues, a review of associated non-I&C procedures was initiated. This review involves the identification of overlap points on the I&C overlap drawings, followed by the verification that these overlap points, with the exception of the I&C (44 series) overlap points, are being adequately covered by the corresponding referenced surveillance procedures [Operations (24 series), EDG Teardown Inspection (34 series), Electrical (42 series), Reactor Engineering (54 series), Radiation Protection (64 series) and Chemistry (74 series)]. Some of the 44 series procedures, which had been rigorously reviewed in the past for overlap, are also being checked during this review. All four EDG's were declared inoperable on September 11, 1994.

Additional discrepancies have been identified during this expanded review, some of which involve Technical Specification violations. The multiple pathways for initiating an EDG start through the Emergency Core Cooling System (ECCS) actuation logic were not being separately tested in accordance with Technical Specification 4.3.3.2; and Emergency Equipment Cooling Water (EECW) actuation from the load sequencer was not being differentiated from EECW actuation on Reactor Building Closed Cooling Water (RBCCW) low pressure in accordance with Technical Specifications 4.8.1.1.2.e.4.b, 4.8.1.1.2.e.6.b and 4.8.1.1.2.e.11.

Additionally, during this review of Technical Specification 4.8, procedural discrepancies have been identified in which the acceptance criteria would have permitted performance outside of the Technical Specification limits. In these cases, the data from the most recent testing has been verified to be within Technical Specification limits. A number of weaknesses which are not Technical Specification violations, were identified and are being corrected. These weaknesses and corrective actions are being tracked in Deviation Event Reports.

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

- 3) On October 20, 1994 the plant was in Operational Condition 5 with reactor temperature of 88 degrees Fahrenheit. It was discovered that certain components of the Core Spray [(BM)(CSS)] and Residual Heat Removal [(BO)(RHR)] systems were not being adequately tested in accordance with Technical Specification section 4.3.3.2. Specifically, Core Spray outboard injection valves, E2150F004 A/B were not being tested in accordance with the Logic System Functional Testing definition. The active components, contacts in the valve control logic, were properly checked but the actual end component operation was not verified. These valves are normally open in the CSS standby lineup. Checking of the ability to open this "normally open" valve was not done correctly. Functional components in the Low Pressure Coolant Injection (LPCI) mode of RHR were also not checked completely. The RHR Service Water [(BI)(RHRSW)] pumps are designed to trip if operating when a LPCI actuation occurs. The trip logic actuation contact was checked but actual RHRSW pump breaker trips for all four pumps were not checked. The normally closed Shutdown Cooling (SDC) warmup valve, E1150F026B is designed to auto close on an LPCI actuation. The LPCI logic contacts were checked but actual valve closure was not demonstrated. LPCI Loop Select Logic was also checked for the LPCI Loop Select trip of the Reactor Recirculation [(AD)(RR)] Motor-Generator (MG) sets. The Loop Select parallel contacts in the trip circuit were properly checked but the actual verification of RRMG set trips was not performed.
- 4) On November 1 and 2, 1994 the plant was in Operational Condition 4 with reactor pressure of 970 psig and reactor temperature of 170 degrees Fahrenheit. A pressure test was being performed on the reactor vessel during this period of time. It was determined that the Logic System Functional testing of the Reactor Protection System [(JC)(RPS)] logic did not fully implement the Logic System Functional testing definition in Technical Specifications. The deficiencies noted were:
- Incomplete testing of RPS scram trip bypass logic for scram discharge volume high level, Main Steam Isolation Valve (MSIV) closure scram, turbine stop (TSV) and turbine control (TCV) valve closure scram.
  - Incomplete testing of RPS scram trip bypass prevention by mode switch contacts for Scram Discharge Volume in Startup and Run, MSIV closure scram in RUN, Intermediate Range Monitor [(IG)(IRM)] scram in Refuel/Startup/Shutdown positioning, and TSV/TCV trip bypass prevention.
  - Scram pilot solenoid valve logic was not tested from the individual fuses to the pilot valves.



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- d) RPS Logic test switches were not individually tested during Logic Functional testing (these switches have no safety function).
- e) Scram discharge volume vent and drain pilot solenoids have not been individually checked.

It was also determined that the System Functional testing was incompletely performed on MSIV Leakage Control System (MSIVLCS) to verify interlocks associated with manual initiation of the system (missed contact) and did not fully test the Remote Shutdown panel operation of Mechanical Draft Cooling Tower Fans A & C in high speed.

- 5) On November 5, 1994 the plant was in Operational Condition 4 with reactor pressure of 0 psig and reactor temperature of 165 degrees Fahrenheit. It was discovered that 16 manual isolation valves in the Primary Containment Monitoring System [(IK)(PCMS)] and Containment Atmosphere Control System [(BB)(CACs)] were not included in the surveillance procedure for checking locked/deactivated closed valves in accordance with Technical Specifications article 4.6.1.1.b.
- 6) On November 10, 1994 the plant was in Operational Condition 4 with reactor pressure of 0 psig and reactor temperature of 122 degrees Fahrenheit. It was determined that the testing methodology for the alternate shutdown panel transfer switches that are required to transfer control of designated equipment and to isolate the control circuitry from the affected fire zones does not adequately verify the isolation of these switches. It was concluded that the intent of Technical Specification section 4.7.11.4 was not met.

Several contacts associated with Low-Low set operation of the Safety Relief Valves (SRV) and Alternate Rod Insertion (ARI) logic were not tested. Based on this, the surveillance testing required by Technical Specification 4.3.4.2 for Logic System Functional testing was incomplete.

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Cause of the Event:

The cause of this event can be attributed to procedural deficiencies. The surveillance procedures used to test the load shed logic were inadequate in that they did not fully test all attributes of this logic. The procedures for testing the load shed logic were initially prepared in the first quarter of 1988 when it was discovered by the Technical Specification Improvement Group that load shed logic functional testing was not being performed (refer to LER 87-048-09). Recognizing the need to prepare logic functional surveillance tests, but not fully understanding the depth of test overlap required, combined with the complexity of these circuits, resulted in less than adequate test overlap in the procedures.

Subsequent to their initial approval in 1988, there were no major revisions to these procedures that would have initiated a review of sufficient depth to discover this problem. However, in 1991 I&C personnel performing required periodic overlap verifications requested electrical maintenance personnel to verify proper overlap between portions of the procedure under their responsibility with those of the I&C group. The reviewer, again not fully understanding the requirements for logic functional testing, did not recognize the problem. Responsibility for the procedures in question was transferred to Technical Engineering in January 1993 where they currently reside.

The surveillance procedures used to perform the LOP and LOP/LOCA tests were inadequate in that they failed to document the energization of two autoconnected loads, Division 2 Control Room Emergency Lighting and the Division 2 RHR Emergency Equipment Cooler 2. They also failed to properly test all combinations of the ECCS actuation logic for auto start of the EDGs and they did not specifically verify EECW actuation from the load sequencer.

The two Division 2 autoconnected loads on EDG-14 that were not included in the procedure had also been absent from earlier revisions of the LOP and LOP/LOCA procedures. The corresponding Division 1 loads however, have been procedurally verified since the conclusion of the Technical Specification Improvement Program (TSIP) in 1988 (Control Room Emergency Lighting) and since initial plant operation (RHR Emergency Equipment Cooler 2). The reason for this discrepancy between divisions could not be specifically determined; however, it is apparent that the opportunity for inclusion of both loads for both divisions existed during the TSIP. Similarly, the failure of the procedures to fully test the EECW emergency start logic from the load sequencer could have been identified during the TSIP, but was not. Incorporation of the changes from Technical Specification Amendment 99 this outage provided the first review of sufficient depth since the TSIP to have surfaced these problems.

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The identification of the failure to adequately test all logic paths within the ECCS actuation logic for the auto start function of the EDGs resulted from a heightened awareness of the requirements for logic functional testing and the greater knowledge level and experience of the personnel performing this review. These personnel were instrumental in the resolution of the inadequate logic functional testing of the undervoltage logic. The complexity of the logic circuitry along with the understanding of what constituted logic functional testing during 1988 when the TSIP was performed may help explain why this discrepancy was not identified prior to this outage.

Since 1988 the electrical system engineers responsible for these procedures have acquired considerable experience. The electrical system engineers are closely associated with I&C system engineers; working in the same group and in the same area. This synergism has created an environment whereby the electrical engineers have gained knowledge from the I&C engineers in areas such as logic functional testing. This is evidenced by the fact that the electrical engineers identified the procedure inadequacies described above.

The events discovered on October 20 and November 1, 2, 5 and 10, 1994 are currently being investigated. The evaluation is considering the individual events and their interrelationship to previously documented events. These discrepancies were identified during the reviews performed as corrective action for the earlier identified problems. A supplement to this LER will be provided when this evaluation is complete.

Analysis of the Event:

4160 Volt ESF busses are equipped with undervoltage relaying. This relaying will initiate a load shed sequence to remove pre-determined electrical loads from the bus. The same relaying will automatically initiate an EDG start. Once started, the EDG output breaker will close. An automatic sequencer will control the rate of loading on the bus to ensure that the required loads are reenergized and to prevent an EDG overload that otherwise would be caused by the combined starting currents of all the components powered by that bus.

The logic associated with the undervoltage relaying has been tested satisfactorily using the revised procedures. Similarly, the loads and logic associated with the LOP and the LOP/LOCA procedures were tested using the new and revised procedures. Testing indicated that the two Division 2 loads and the EECW start logic are functioning properly. Additionally, the EDG start logic has been tested using the new procedures. Its logic also was shown to be functioning properly. Therefore, although testing required to meet Technical Specifications had not been performed adequately in the past, it is concluded at this point that the required loads and logic have been functioning properly; and thus, there was no threat to the health or safety of the public.

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The logic associated with ECCS standby components, RPS scram trip bypass, Alternate Shutdown isolation function, RPS scram discharge volume vent and drain pilot solenoids, RPS scram trip bypass prevention logic, Alternate Shutdown panel, Remote Shutdown panel and Low-Low set operation of SRVs and ARI contacts has been tested successfully. Based on this success, Detroit Edison is confident that these surveillance deficiencies did not result in any actual loss or degradation of those functions required by the individual systems. Testing of MSIVLCS will be performed prior to startup. Based on past performance of this equipment, it is expected that this logic will also be shown to be functioning properly. Results of this testing will be discussed in a supplement LER.

The safety significance of the missed check of Primary Containment manual valves in locked closed position is a potential inadvertent loss of primary containment integrity should these valves be left open when primary containment is required. The CACS valves are typically closed and they are only operated for the periodic testing of Drywell to Torus Vacuum breakers. These valves were routinely opened on a monthly periodicity to test the Torus Vacuum breakers and were independently verified to be in the closed position following the performance of 24.402.01, "Drywell and Suppression Chamber Vacuum Breaker Operability Test". Technical Specification Amendment 96 changed the periodicity to 18 months. This change was issued after the plant entered an extended shutdown on December 25, 1993 and is not required testing during modes 4 and 5. Also Section 5.2 of procedure 24.425.01, "Primary Containment Integrity Verification", did document the valve position but did not require verification of the closed position. The PCMS valves were controlled under the locked valve program, which would ensure proper position of the valves but not at the Technical Specification required frequency. There has been no evidence of actual valve mispositioning in either system.

Corrective Actions:

Undervoltage calibration and logic functional test procedures (42.302.XX series) have been revised for the 4160 Volt busses 64B, 65E, 64C, and 65F respectively to correct the identified deficiencies. Procedures for the 480 volt busses 72EA, 72EB, 72EC, 72ED, 72B, 72C, 72E, and 72F have also been revised to correct their deficiencies. The deficiencies noted above along with several other deficiencies found during the review process have been corrected. The revised procedures have been performed with satisfactory results.

A complete review of related electrical surveillances requiring calibration or functional testing has been completed.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

The 30-day load shed channel functional surveillances have been revised to incorporate changes made in the 42.302.XX series procedures and these have been performed with satisfactory results.

A comprehensive review of the LOP and the LOP/LOCA procedures, schematics, load diagrams, design calculations and overlaps was performed to ensure that all of the loads and logics are being properly tested. Likewise, a review of all other Technical Specification section 4.8 surveillance requirements was performed to ensure that the surveillance procedures are adequate to perform the required testing. Finally, an overlap review of the 24, 34, 42, 54, 64 and 74 series procedures with the 44 series procedures has been performed to verify the adequacy of the overlap. Some of the 24 and 44 series procedures were also reviewed.

The LOP and the LOP/LOCA procedures have been revised along with several other affected procedures identified during this review. Two new procedures were written to properly test the EDG start logic. These procedures were performed and verified operability of the EDGs.

The ECCS standby components have had their passive logic checked by work request (WR). No wiring deficiencies were noted. Procedure changes to the applicable Logic System Functional tests (44 series) will be complete by February 15, 1995.

The RPS scram trip bypass logic has been either tested (IRM trip bypass) by WR or evaluated to ensure function has been properly demonstrated (SDV high level, MSIV position, TSV/TCV position). The applicable procedures (24 and 44 series) will be revised to correct these test deficiencies by February 15, 1995.

The RPS scram trip bypass prevention logic was tested by WR. Procedures will be revised to incorporate the new requirements (24 and 44 series) by February 15, 1995.

The RPS scram trip string individual logic components tests will be incorporated into the applicable Logic System Functional tests. The scram pilot solenoid passive checks have been evaluated to ensure that the function has been demonstrated and will be included in the Logic System Functional revision by February 15, 1995.

The RPS scram discharge volume vent and drain pilot solenoids were individually tested by a partial logic functional. Procedure revision will incorporate the testing requirements (44 series) by February 15, 1995.

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The MSIVLCS and Remote Shutdown procedures (24 series) were revised to include the missed testing requirements. Testing will be performed using the new procedure for MSIVLCS prior to startup. The Remote Shutdown testing is complete.

The Primary Containment valve verification procedure is revised to include the missed valves and will be performed prior to startup.

The ATWS Logic Functional procedure was temporarily changed to include the missed contacts for Low-Low set operation of SRVs and ARI logic. It will be permanently changed by February 15, 1995.

The Alternate Shutdown isolation function was demonstrated by WR. Procedure revisions will be completed by February 15, 1995.

NPP-CT1-04, "Surveillance/Fire Protection Procedure Maintenance" will be revised to provide an improved logic functional test definition and specific requirements for electrical surveillances. Training on the revised procedural requirements will be provided to the electrical and I&C system engineers. This will be completed by February, 1995.

A set of electrical surveillance overlap drawings will be created and maintained. This will be completed by February, 1996.

Test overlap requirements will be periodically reviewed in the I&C continuing training program.

The events discovered in October and November of 1994, are still being investigated. Additional or revised corrective action developed from this investigation will be described in a supplement to this LER.

Previous Similar Events:

Previous failures to meet Technical Specification surveillance requirements are documented in LER 87-048-09.

Failed Component Data:

There were no failed components.