

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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License No: NPF-43

Report No: 50-341/99014(DRP)

Licensee: Detroit Edison Company

Facility: Enrico Fermi, Unit 2

Location: 6400 N. Dixie Hwy.
Newport, MI 48166

Dates: September 9 through October 20, 1999

Inspectors: S. Campbell, Senior Resident Inspector
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Approved by: A. Vogel, Chief
Reactor Projects Branch 6
Division of Reactor Projects

EXECUTIVE SUMMARY

Enrico Fermi, Unit 2 NRC Inspection Report 50-341/99014(DRP)

This inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covers a 6-week period of resident inspection.

Operations

- Control room operators took appropriate actions in accordance with procedures in promptly responding to an unexpected decrease in reactor recirculation pump speed. Operators stabilized the plant at 63 percent reactor power. Generally, the plant responded as expected (Section O1.1).
- Inattention to detail, lack of self-checking and lack of an effective peer review, resulted in an inadvertent trip of emergency diesel generator 14 during testing. An operator used the wrong switch to adjust voltage. The error resulted in the emergency diesel generator voltage regulator circuitry being damaged. The error caused extensive engineering and maintenance resources to be diverted from planned activities to troubleshoot, and repair the affected components (Section O1.2).
- The licensee discovered that a drywell purge system containment penetration had failed a Technical Specification required local leak rate test. Subsequently, a Notice of Enforcement Discretion was issued by the NRC regarding the applicable Technical Specification action requirements. The licensee requested an exigent Technical Specification change and implemented the required compensatory actions necessary to continue operation with the inoperable penetration (Section O4.1).
- Operators performed thorough reviews of scheduled work and deferred work as necessary to prevent plant impacts during a reactor core isolation cooling system outage (Section M1.2).
- An operator exhibited a good questioning attitude that resulted in the identification of two leaking emergency equipment service water discharge check valves (Section M2.1).

Maintenance

- The work scheduling organization scheduled two surveillance tests that could have reduced the availability of Technical Specification related systems during a reactor core isolation cooling system maintenance outage. (Section M1.2).
- The licensee identified that tag out protection requirements were not met during performance of maintenance activities on a feedwater heater valve. The work procedure was inadequate, in that it was not consistent with tag out protection requirements (Section M1.3).
- Several age-related equipment problems that impacted plant operation and safety-related equipment were identified, which included aging

electrolytic capacitors and worn emergency equipment service water discharge check valves. Previous preventive maintenance programs had not been effective in preventing these failures (Sections O1.1, M2.1, and E1.2).

Engineering

- The operability determinations, engineering support and the engineering functional analysis to address the emergency equipment service water leaking valves were effective and thorough (Section M2.1).
- The Independent Safety Engineering Group thoroughly reviewed and documented the circumstances surrounding the unexpected reactor recirculation flow decrease. The Independent Safety Engineering Group identified procedural guidance weaknesses regarding operator actions in response to reactor recirculation flow decreases. (Section E1.1).
- The licensee was appropriately addressing accelerated random failures of aging capacitors that caused equipment problems for nonsafety and safety systems. The corrective actions were comprehensive and included a preventive maintenance program to replace capacitors in circuits at an increased frequency (Section E1.2).

Plant Support

- The inspectors concluded that radiation areas were properly posted, high radiation areas were locked, monitoring equipment calibrated, and personnel work practices were appropriate (Section R1.1).

Report Details

Summary of Plant Status

Unit 2 began this inspection period at 97 percent power. On September 11, 1999, power was reduced to perform scram timing tests. During the power reduction, the speed of the "A" recirculation pump unexpectedly decreased due to a failed demand signal. Following repairs and testing, power was returned to 97 percent on September 16. On September 23, power was reduced to 88 percent to comply with Technical Specification (TS) 3.6.8.1, Action B, due to a leaking containment isolation valve. After receiving NRC enforcement discretion regarding applicable TS action requirements, power was returned to 97 percent the same day.

I. Operations

O1 Conduct of Operations

O1.1 Unexpected Run Back of Recirculation Pump A

a. Inspection Scope (71707)

On September 11, 1999, the inspectors observed the operators reduce power to perform maintenance and testing of plant components. During the power reduction, an unexpected speed decrease of Reactor Recirculation Pump A occurred. The inspectors reviewed procedures, and chart recorder data to determine whether equipment and operator responses were appropriate.

b. Observations and Findings

The operators reduced power by decreasing reactor recirculation pump speed to perform a rod shuffle and scram timing tests. Procedure 22.000.03, "Power Operation 25 Percent to 100 Percent to 25 Percent," required reactor recirculation pump speed control be placed in manual when power reached 88 percent and 60 percent MG set speed.

When the operator depressed the reactor recirculation automatic/manual speed control transfer button, the speed demand signal failed, causing an unexpected speed decrease for Reactor Recirculation Pump A and a transient in the system. In response, the operator locked the associated MG set scoop tube for Pump A and the speeds for Pumps A and B stabilized at 45 and 60 percent, respectively, with reactor power at 80 percent.

The transient caused drain line check valves from the North and South No. 5 Feedwater Heaters to the flash tank to close, thereby completing the logic (No. 3 limiter) to decrease Pump B speed to 38 percent to anticipate a loss of feedwater. In response, the operators entered Abnormal Operating Procedure (AOP) 20.107.02, "Loss of Feedwater Heating," and verified sufficient feedwater heating for the reduced power level.

With power at 74 percent and total core flow at 54 percent, the operators recognized that the plant was in the stability awareness region of TS Figure 3.4.10-1, and began inserting control rods per the reactor engineer's direction. Within 12 minutes, power was reduced to 67 percent and the stability awareness region was exited. Final power was maintained at 63 percent with Reactor Recirculation Pumps A (45 percent) and B (37 percent) speeds mismatched by 7 percent, which was within TS 3.4.1.3 limit of 10 percent. The licensee initiated Condition Assessment Resolution Document (CARD) 99-16591 to document the unexpected pump decrease.

The licensee found that a degraded electrolytic capacitor in a amplifier card for MG Set A General Electric Milliamp Controller (GEMAC) caused the failed demand signal. The card was replaced before power was increased.

c. Conclusions

Control room operators took appropriate actions in accordance with procedures and TSs while promptly responding to an unexpected decrease in reactor recirculation pump speed. Generally, the plant responded as expected. The licensee identified that an aging capacitor in the MG set GEMAC amplifier card caused an unexpected run back of Reactor Recirculation Pump A.

O1.2 Operator Error During Emergency Diesel Generator (EDG) 14 Test

a. Inspection Scope (71707)

During EDG 14 testing, an operator manipulated the wrong switch while attempting to adjust voltage. The inspectors followed up on the causes and consequences of the error. The inspectors interviewed operations personnel, and reviewed applicable procedures.

b. Observations and Findings

On September 24, 1999, the inspectors observed a portion of EDG 14 testing per Surveillance Procedure 24.307.17, "EDG - Start and Load Test." After the EDG was started and loaded, the individual assigned to peer-check the EDG began recording EDG parameters. Consequently, the peer-check did not observe the EDG operator making minor voltage adjustments. Instead of using the kilovolt amperage reactive switch to make these adjustments, the EDG operator did not self-check and rotated the voltage regulator automatic/manual switch to "manual" and then "automatic." As a result, this action caused a field failure trip of the EDG. Attempts to restart the EDG were unsuccessful.

Following 3 days of troubleshooting, which included the voltage regulator circuits and the motor operated control switch, the licensee determined that the circuit board for the voltage regulator had been damaged from the operator manipulating the voltage regulator automatic/manual switch. The board was replaced and EDG 14 was tested satisfactorily on September 26.

The inspectors reviewed Surveillance Procedure 24.307.17 and did not identify any violations.

c. Conclusions

Inattention to detail, lack of self-checking and lack of an effective peer review, resulted in an inadvertent trip of EDG 14 during testing. The operator error resulted in the EDG voltage regulator circuitry being damaged which delayed the restoration of the EDG to service. In addition, the error caused extensive engineering and maintenance resources to be diverted from planned activities to troubleshoot, and repair the EDG.

O2 Operational Status of Facilities and Equipment

O2.1 Engineered Safety Feature System Walkdowns (71707)

The inspectors used Inspection Procedure 71707 to walk down accessible portions of the following engineered safety feature systems:

- EDGs 11 and 14
- High Pressure Coolant Injection (HPCI) System
- Divisions 1 and 2 Switchgear
- Divisions 1 and 2 Control Center Heating, Ventilation and Air Conditioning Systems

Equipment operability, material condition, and housekeeping were acceptable in all cases. The inspectors identified no substantive concerns as a result of these walkdowns.

O4 Operator Knowledge and Performance

O.4.1 Notice of Enforcement Discretion (NOED) Granted for Leaking Drywell Purge Supply Valve T4803F601

a. Inspection Scope (71707)

The inspectors followed up on the licensee's response to a leaking containment isolation valve by visually inspecting the valve and participating in conference calls for granting the licensee an NOED.

b. Observations and Findings

On September 22, 1999, the licensee tested Containment Penetration X-26 per TS Surveillance Requirement 4.6.1.8.2. Penetration X-26 has three isolation valves tested concurrently: 24-inch Nitrogen Inerting (NI) Drywell Air Purge Inlet Supply Valve T4803F601 in the drywell, 24-inch NI Drywell Air Purge Inlet Supply Valve Outboard Isolation Valve T4800F407, and 10-inch NI Drywell Nitrogen Supply Outboard Isolation Valve T4800F408. Valve T4800F408 is the nitrogen isolation valve inside the secondary containment and T4800F407 opens to vent air from the drywell to the

secondary containment. At 1:45 p.m., the licensee discovered that Valve T4803F601 leaked above the criteria of 14.87 standard cubic feet per hour (SCFH) at 26.7 SCFH.

In response to the failed leak test, the operators de-energized closed Valve T4803F601 and entered TS 3.6.1.8, Action B, which required repairing the valve within 24 hours or placing the unit in hot shutdown within 12 hours and cold shutdown within the following 24 hours.

During the next shift, operators energized and stroked Valve T4803F601 again to clear any debris from the valve seat that could prohibit full valve closure. Following stroking, engineers tested the valve and discovered 82.85 SCFH leakage, which, when added to the actual total leakage of 67.28 SCFH, was 27.87 SCFH below the total allowed containment leakage of 178.0 SCFH. Using a liquid soap solution for bubble leak detection, the licensee was unable to quantify the minimal leakage for Outboard Valve T4800F407 and verified no leakage for Outboard Valve T4800F408. After testing, Valve T4803F601 was closed and de-energized due to the leak.

Since a drywell entry to repair the valve was not possible at full power, on September 23, the licensee requested from the NRC enforcement discretion with respect to TS 3.6.1.8, Action B. Meanwhile, at 4:00 p.m., operators began reducing power to comply with TS 3.6.8.1, Action B. The NRC exercised discretion at 5:30 p.m. and the power reduction was stopped at 88 percent. Operators returned power to 97 percent by 6:50 p.m.

As conditions to the NOED, the licensee committed to the following compensatory measures: 1) installing a blank flange on Valve T4800F407, as an additional leakage barrier, 2) de-energizing closed Valve T4803F601, 3) verifying closed, Valves T4800F407 and T4800F408 every 31 days, and 4) testing Penetration X-26 every 45 days. The NRC approved exigent Amendment 135 to TS 3.6.8.1, allowing continued operation with the inoperable penetration provided the above compensatory measures were met.

The inspectors verified that situational surveillance tests and Surveillance Scheduling/Tracking 217990920 documented the implementation of compensatory measures. Testing of Valve T4803F601 is scheduled for November 4, 1999.

The licensee documented the failed leak test on CARD 99-16855. The cause of the leaking valve will be determined following the next plant shutdown. This item will remain open as an unresolved item (URI 50-341/99014-01) pending the determination of the cause of the leaking valve and the inspectors' review of associated corrective actions.

c Conclusions

The licensee discovered that a drywell purge system containment penetration had failed a TS required local leak rate test. Subsequently, a NOED was issued by the NRC regarding the applicable TS action requirements. The licensee requested an exigent TS change and implemented the required compensatory actions necessary to continue operation with the inoperable penetration.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments

a. Inspection Scope (62707)

The inspectors observed all or portions of the following work activities:

- Procedure 24.307.17, "EDG 14 - Start and Load Test,"
- Procedure 24.307.15, "EDG 12 - Start and Load Test,"
- Work Request (WR) 000Z993699, "Repair Emergency Equipment Service Water Discharge Check Valve P4500F002A,"
- Procedure 42.302.11, "Channel Functional Test of Division 1 4160 Volt Bus 64C Under voltage Circuits," and
- WR 000Z973664, "Replace Motor Control Center 72EB-2D Position 4A for EDG 12 Switchgear Room South Supply Fan."

b. Observations and Findings

The inspectors observed personnel perform maintenance activities and surveillance tests in accordance with applicable procedures. Inspectors reviewed selected training records of individuals and verified personnel were qualified to perform the activities. Noteworthy observations are listed in the sections below.

c. Conclusions

Observed maintenance and surveillance activities were performed by qualified individuals using appropriate procedures.

M1.2 Review of Scheduled Work Activities During Reactor Core Isolation Cooling (RCIC) Maintenance Activity

a. Inspection Scope (62707)

The inspectors reviewed instances where operations staff identified work scheduling conflicts that could have resulted in increased probabilistic risk consequences during the conduct of a RCIC outage. The inspectors interviewed operations personnel, and reviewed applicable procedures and documentation.

b. Observations and Findings

Between September 7 and 10, 1999, the licensee removed the RCIC system from service for scheduled maintenance. During the activity, operators reviewed the impact other scheduled work had during the RCIC outage. In particular, Surveillance Procedure 44.030.263, "Emergency Core Cooling System - Reactor Vessel Water Level (Automatic Depressurization Level 3 and Feedwater/ Main Turbine Level 8), Division 1,

Channel A Functional Test," was scheduled for September 8, 1999. Conducting the test required Standby Feedwater Isolation Valve N2103-F001 be closed, thereby rendering the standby feedwater system inoperable.

Before releasing the surveillance, operators identified on TMIS-99-0095, "Risk Assessment of RCIC System Outage," that standby feedwater should not be placed out of service. Operators initiated CARD 99-16942 to document the surveillance conflict with the RCIC risk assessment. Discussions with the risk assessment personnel determined that with the standby feedwater system out-of-service for the short duration, the performance of the surveillance was acceptable. However, the operators conservatively deferred the performance of the surveillance to a later date, after completion of the RCIC outage.

Further, the operators reviewed Procedure 24.408.03, "Division 1 Primary Containment Monitoring System Valve Operability and Position Indication Verification Test," which was scheduled for September 8. The operators identified that conducting the test may swap the Division 2 HPCI suction source from the condensate storage tank to the torus during the Division 1 RCIC outage. Although the TS allowed the HPCI suction alignment to the torus for 12 hours, the operators considered this undesirable and decided to defer the test until after the RCIC outage.

The inspectors reviewed the risk matrix and determined that having Division 1 RCIC and Division 2 HPCI simultaneously inoperable was low risk, however, performance of an activity on both divisions was not consistent with operations department expectations. The licensee initiated CARD 99-18080, to document the scheduled surveillance conflict with the RCIC outage.

c. Conclusions

The work scheduling organization scheduled two surveillance tests that could have reduced the availability of TS related systems during the RCIC outage. Operators performed thorough reviews of scheduled work and deferred work appropriately.

M1.3 Replacement of Motor Operator for Main Turbine Extraction Steam to 5 South Feedwater Heater Valve N3016F606

a. Inspection Scope (62707)

The inspectors reviewed the circumstances related to the inadequate implementation of tag out protection during performance of a maintenance activity on the main turbine extraction steam to 5 south feedwater heater valve N3016F606. The inspectors interviewed operations and maintenance personnel, and reviewed associated documentation.

b. Observations and Findings

On September 13, 1999, several pairs of electricians entered a high heat stress area to replace the motor operator for Valve N3016F606. The motor operator was electrically

undersized and caused repetitive opening of the fuse during valve stroking. After installing the new motor, the tags were cleared and valve stroked but the motor wiring was reversed.

An operator realized that correcting the deficiency would require valve tagging and obtaining a protection leader for the new safety tagging record protection contract. The operator verified this requirement with control room personnel and returned to discover that an electrician corrected the wiring per the WR 000Z993336 instructions without a protection leader. The licensee initiated CARD 99-17246 to document this condition. Subsequently, operators stroked the valve and returned the valve to service.

Following interviews, the licensee discovered that the WR 000Z993336 instructions did not include the requirements in Operations Conduct Manual MOP 12, "Tagging and Protective Barrier System," for a new protection leader. This activity did not involve safety-related equipment, as a result a violation was not identified.

c. Conclusions

The licensee identified that tag out protection requirements were not met during performance of maintenance activities on a feedwater heater valve. The work procedure was inadequate, in that it was not consistent with tag out protection requirements.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Leaking Discharge Check Valves on Divisions 1 and 2 Emergency Equipment Service Water (EESW) System

a. Inspection Scope (37551)

On October 11, 1999, the licensee discovered that EESW Discharge Check Valves P4500F002A and P4500F002B were leaking on the Division 1 and 2 EESW systems. The inspectors followed up on the plant impact from the leaking valves. The inspectors conducted walkdowns of affected systems, observed corrective maintenance activities, and reviewed applicable documentation.

b. Observations and Findings

The licensee scheduled a biocide treatment of the Division 2 Ultimate Heat Sink which required that the Division 2 service water pumps be started. The operators started Division 2 Residual Heat Removal Service Water (RHRSW) Pumps B and D. Before starting the Division 2 EESW Pump, an operator, who was sent to verify locally the pump starts, noticed the Division 2 EESW pump shaft rotating backwards. The RHRSW and EESW systems have common return piping and EESW Discharge Check Valve P4500F002A should prevent the RHRSW back flow that caused the EESW pump rotation.

Subsequently, the local operator contacted control room personnel and the operators tagged out the EESW system for check valve disassembly, inspection, and repair. During disassembly, the licensee discovered that a stud and a nut, which attach the disc holder to the valve disc, were worn and corroded and had prevented the disc from fully seating.

The licensee investigated the potential leaking condition of EESW Discharge Check Valve P4500F002B on Division 1. During testing and maintenance on this check valve, the licensee found similar conditions (leaking valve and worn parts). The Division 1 EESW check valve was repaired following Division 2 EESW check valve repairs. Both check valves were tested satisfactorily.

The licensee reviewed the Updated Final Safety Analysis Report (UFSAR) and the system drawings and confirmed that the leaking check valves would not impact RHRSW and EESW cooling capability during a design basis accident. The licensee documented the condition on CARD 99-18162 and developed an engineering functional analysis report that documented this conclusion. The inspectors reviewed these documents and had no concerns.

Both valves are in the inservice inspection program and each passed the last inspection. However, a preventive maintenance (PM) program had not been developed for valve refurbishment because it was not required by the vendor manual and that this failure mode had not been identified previously. The licensee is currently conducting a root cause investigation for the CARD.

c. Conclusions

An operator exhibited a good questioning attitude that resulted in the identification of two leaking EESW discharge check valves. The operability determinations, engineering support and the engineering functional analysis to address the leaking valves were sound. The leaking check valves were caused by age-related conditions of worn parts and corrosion, which a PM program for periodic valve refurbishment had not been developed to prevent this condition.

M8 Miscellaneous Maintenance Issues (92902)

- M8.1 (Closed) Licensee Event Report (LER) 50/341-97013-00: High Pressure Coolant Injection System Isolation While Performing Surveillance. While performing a HPCI turbine exhaust diaphragm pressure functional test, the HPCI steam supply inboard isolation valve unexpectedly received an isolation signal. The signal was generated from a spurious closure of a relay (intermittent component failure) in the closure logic for the valve. The licensee replaced the relay and monitored the circuit. No additional spurious relay closures occurred. The inspectors did not identify additional concerns.
- M8.2 (Closed) Inspection Followup Item (IFI) 50-341/97010-02: Actions to Correct Debris Problems in the Reactor. The licensee identified fuel failures caused by foreign material in the core. The inspectors reviewed the licensee's actions to correct foreign material exclusion (FME) problems as documented in Deviation Event Report 97-0536 and

CARD 98-12342. The licensee completed a self assessment (Maintenance Self-Assessment Report NPMA 97-0215) of FME program effectiveness and recommended the following improvements:

- provide training to craft/supervision and planners on the use of FME forms in work packages,
- simplify FME forms,
- revise Procedure MMA 10, "FME/Plant Housekeeping," to address plugging and covering openings,
- develop training for cutting and prepping of pipe which incorporates FME requirements,
- develop sign-off steps for FME controls in work packages involving system breaches,
- incorporate controls into specific maintenance training courses, and
- conduct a site-wide FME awareness session.

The inspectors verified the corrective actions have been completed.

III. Engineering

E1 Conduct of Engineering

E1.1 Review of Independent Safety Engineering Group (ISEG) Report

a. Inspection Scope (37551)

The inspectors observed ISEG interviews with involved operators, and reviewed ISEG Report 99-010, "Transient Analysis Report for Reactor Recirculation Pump A Speed Decrease."

b. Observations and Findings

The ISEG interviewed operators, collected plant parameter data from strip chart recorders, the General Electric Transient Analysis Report, and Sequence of Events Recorders, following the Reactor Recirculation Pump A run back on September 11, 1999. The assessment was documented in ISEG Report 99-010. The inspectors confirmed that Licensing/Safety Engineering Conduct Manual MLS 1, Revision 9, "Post Event Investigations," requirements were met in developing the report.

During the review, ISEG identified that an AOP did not exist for an uncontrolled decrease in reactor recirculation flow even though this transient was described in the UFSAR, Chapter 15.3, "Decrease in Reactor Coolant System Flow Rate." The ISEG initiated CARD 99-16591 and recommended that AOP 20.138.03, "Uncontrolled Recirculation Flow Increase," be revised to include the appropriate guidance.

The inspectors reviewed the UFSAR and AOP 20.138.03 and confirmed the licensee's findings. Although Procedure 20.138.03 addressed recirculation flow increases, the

procedure instruction to lock the scoop tube was sufficient to rectify the abnormal condition of an unexpected flow decrease. The inspectors verified that the procedure was revised.

c. Conclusions

The ISEG thoroughly reviewed and documented the circumstances surrounding an unexpected reactor recirculation flow decrease. ISEG identified procedural weaknesses regarding operator actions in response to reactor recirculation flow decreases.

E1.2 Component Failures Due to Aging Capacitors

a. Inspection Scope (37551)

The inspectors followed up on the licensee's approach to correcting equipment problems due to aging electrolytic capacitors.

b. Observations and Findings

Before and during the inspection period, several component failures occurred on safety-related systems due to aging capacitors. The licensee discovered capacitor related failures on controllers for the HPCI system (LER 50-341/99003) and the controller for Reactor Recirculation Pump A (CARD 99-16955) which caused demand signals to fail down scale. Further, the failures of HPCI Steam Leak Detection Temperature Switches E41N602A and B, (CARDS 99-16853 and 99-17434) and the RCIC Temperature Monitor E51N602A (CARD 99-11873) during the calibrations were caused by old capacitors. Subsequently, the licensee replaced these components.

Although the current PM program was developed based on the vendor's recommendations, these recommendations did not consider capacitor aging for these systems. In response to this generic issue, the licensee performed an extent of condition review for CARD 99-16955 (Reactor Recirculation Pump A) of equipment with manual amplifier boards with capacitors and equipment with capacitor circuits.

During the review, the licensee determined that 25 of 34 manual amplifier boards in non-qualified systems were replaced with boards having new capacitors under an existing replacement program for obsolete GEMAC (CARD 98-15526). The remaining nine non-qualified amplifier boards are scheduled to be replaced during the next refueling outage.

For the safety systems with GEMAC, manual amplifier boards were replaced on Divisions 1 and 2 Emergency Equipment Cooling Water Systems and the HPCI system as similar failures occurred between June and August of 1999. The RCIC system GEMAC manual amplifier board is scheduled to be replaced in June 2000.

The licensee conducted a Deviation Event Report/CARD database search of component capacitor failures and found, a total of six capacitor related failures for controllers (Moore and Bailey) and recorders (Westronics and L & N). Proposed corrective actions

for CARD 99-16955 included a PM activity to replace capacitors in plant circuits and frequently replenishing stock with fresh capacitors.

c. Conclusions

The inspectors concluded that the licensee was appropriately addressing the accelerated random failures of aging capacitors that caused equipment problems for nonsafety and safety systems. The corrective actions were comprehensive to include capacitors in stock and to develop a PM program to replace capacitors in circuits at an increased frequency.

E8 Miscellaneous Engineering Issues (92903)

E8.1 (Closed) LER 50-341/97008-00: Potential Common Mode Failure for 480V Motor Control Center Switches. The licensee determined that due to lack of an adequate PM, the 480V fused disconnect switches may not have latched in the closed position. A Level III Corrective Action Violation 50-341/97003-1013 (EA 97-01) was written and a \$50,000 civil penalty issued. An interim corrective action included lubricating, cleaning (not to exceed 670 days) and exercising selected switches. Long term corrective action included replacing the switches with an improved design.

E8.2 (Closed) IFI 50-341/96201-08: Licensee to Assess Jet Impingement on Main Steam Isolation Valve (MSIV). The Safety System Function Inspection team was concerned that a high energy line break may impact the pneumatic dash pot for the MSIV actuators and prevent the valve from closing. The licensee reviewed Calculation 042153, "Primary Pressure Boundary Components Affected By Postulated Pipe Breaks Inside Containment," and found a postulated feedwater line break that impinged on the valve actuator, but this break did not impact the dash pot and associated piping. However, this break could impact the spring guide rods and lower spring retaining plate. Calculation 041720 credited MSIV closure using spring force without its normal motive force (pneumatic supply). The licensee determined that these pipe breaks were not required to be postulated because the break caused low pipe stress levels and would not impact MSIV closure. Subsequently, the postulated breaks were removed from the UFSAR per Technical Service Request 28868. This IFI is closed.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 Radiological Observations During Routine Plant Tours (71750)

The inspectors conducted periodic tours of the plant and verified that selected radiation monitoring equipment was within the calibration dates, areas were properly posted and locked high radiation areas were locked. The inspectors observed that personnel utilized appropriate radiological protection practices during the conduct of routine activities.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on October 20, 1999. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

J. Bragg, Supervisor, Audits
C. Cassise, Work Control
D. Cobb, Superintendent, Maintenance
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R. DeLong, Assistant to the Manager, Engineering
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S. Stasek, Supervisor, Independent Safety Engineering Group

NRC

S. Campbell, Senior Resident Inspector
A. Vogel, Chief, Reactor Projects Branch 6

INSPECTION PROCEDURES USED

| | |
|-----------|--------------------------|
| IP 37551: | Onsite Engineering |
| IP 62707: | Maintenance Observation |
| IP 71707: | Plant Operations |
| IP 71750: | Plant Support Activities |
| IP 92902: | Followup - Maintenance |
| IP 92903: | Followup - Engineering |

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

| | | |
|-----------------|-----|---|
| 50-341/99014-01 | URI | Determine cause of failed leak test of Penetration X-26 |
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Closed

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| 50-341/997013-00 | LER | High pressure coolant injection system isolation while performing surveillance |
| 50-341/97010-02 | IFI | Actions to correct debris problems in the reactor |
| 50-341/97008-00: | LER | Potential common mode failure for 480V motor control center switches |
| 50-341/96201-08: | IFI | Licensee to assess jet impingement on main steam isolation valve |

Discussed

None

LIST OF ACRONYMS USED

| | |
|-------|--|
| AOP | Abnormal Operating Procedure |
| CARD | Condition Assessment Resolution Document |
| EDG | Emergency Diesel Generator |
| EESW | Emergency Equipment Service Water |
| FME | Foreign Material Exclusion |
| GEMAC | General Electric Milliamplifier Controller |
| HPCI | High Pressure Coolant Injection |
| IFI | Inspection Followup Item |
| ISEG | Independent Safety Engineering Group |
| LER | Licensee Event Report |
| MG | Motor Generator |
| MSIV | Main Steam Isolation Valve |
| NI | Nitrogen Inerting |
| NOED | Notice of Enforcement Discretion |
| NRC | Nuclear Regulatory Commission |
| PM | Preventive Maintenance |
| RCIC | Reactor Core Isolation Cooling |
| RHRSW | Residual Heat Removal Service Water |
| SCFH | Standard Cubic Feet Per Hour |
| TS | Technical Specification |
| UFSAR | Updated Final Safety Analysis Report |
| URI | Unresolved Item |
| WR | Work Request |